AMERICAN GAS ASSOCIATION MONTHLY

Vol. IV No. 10

OCTOBER, 1922

Fourth Annual

CONVENTION

and

EXHIBITION

ATLANTIC CITY

October 23rd to 27th

C O N T E N T S

VOLUME IV OCTOBER, 1922 NUMBER 10

AUTHORS

AMERICAN GAS ASSOCIATION MONTHLY
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American Gas Association Monthly

Vol. IV OCTOBER, 1922 No. 10

Bring the Convention Home

One of the eastern electric companies devised and put into operation a plan which strikes us as having distinct merit—most worthy of adoption.

Essentially it was this:—Before their delegates left for the convention of their national association they were instructed to be on the lookout for any points of special interest. Further, they met at the convention on the first evening and there the program was carefully gone over and certain portions were assigned to each delegate to cover and be ready to report on at a later date.

The week following the convention, two evenings were set aside for meetings of the employees of this company who had not attended this convention. On these evenings, the delegates to the convention abstracted the convention papers which came under their assignment as well as reporting on any other points of special interest which had come to their attention.

These meetings were highly successful and marked by a large and enthusiastic attendance of employees.

In this way the convention was brought home to those who were unable to attend.

It strikes us that this procedure merits the most careful attention and consideration. Our yearly conventions undoubtedly do a great deal of good, accomplish much and are distinctly worth while. In fact, we can say, that they could be profitably attended by every employee in the industry. They then, of course, would reach the point of maximum effectiveness.

However, such an attendance is, of course, out of the question. We must be satisfied if a few absorb the information and benefits there presented.

But why let it stop there?

If these few can bring home the convention to those who were not fortunate enough to attend, how much wider would be the scope of usefulness of our yearly gatherings. "Bring the convention home" should be the aspiration of every man attending and we believe that the plan adopted by our friends is the most practical and effective means yet devised.

Bring the Convention Home

AMERICAN
GAS ASSOCIATION
MONTHLY

Vol. IV OCTOBER, 1922 No. 10

The Convention

DURING the week of October 23rd Atlantic City will see the largest assembly of representative gas men and appliance manufacturers ever gathered together at one time. The turning point in the affairs of the gas business has been reached and the future holds an alluring promise for our industry.

The Fourth Annual Convention and Exhibition of the A. G. A. will therefore mark the culmination of four year's of ceaseless effort to put the gas business back on the road to prosperity.

The business program of the Convention shows somewhat of a departure this year. Several speakers prominent in other walks of life will address our membership on subjects in which we are all vitally interested. It is always well for one to know what others think of our particular business and the subjects to be presented this year are most pertinent to our major problems.

The diversified character of gas appliances, apparatus, etc., on display in the 160 spaces of the Exhibition will present to the visiting gas men a rare opportunity for inspection and selection of appliances, equipment and apparatus for their needs. A special feature will be Mrs. Peterson's cooking and baking lectures and demonstrations to which will be invited some 300 domestic science school teachers, the local public in Atlantic City and ladies stopping at the various hotels.

A model gas plant in miniature in full operation will be on display on the boardwalk front of the Pier and in addition the Association will have a historical display of antique gas appliances.

Reduced railway fares from all parts of the country have been granted by the various Railway Passenger Associations thus effecting a considerable saving in transportation expenses for those attending the meeting. A special certificate which must be presented at the time of purchasing tickets has already been sent to every member. Additional certificates will be furnished by the Association headquarters on request.

The privileges of the Seaview Golf Club have been extended to the members through the courtesy of Mr. C. H. Geist and the Entertainment Program is one which will provide ample opportunity for real enjoyment during the Convention week.

It is suggested that those who will attend the meeting make their reservations for hotel accommodations direct to the hotel of their selection. No one hotel will be designated as the official headquarters of the Association.

Announcement will be shortly made to the membership by mail advising which of the Convention papers and reports are available in advance of the meeting.

The business and entertainment programs are as follows:

Program of Business Sessions 1922 Convention

GENERAL SESSIONS

(Convention Hall—Ocean End of Steel Pier)

Tuesday Morning, October 24, ten o'clock

Meeting called to order and opening remarks—D. D. Barnum, President, Boston Consolidated Gas Company, Boston, Mass.

Report of Secretary-Manager—Oscar H. Fogg.

Report on Membership and Election of Active (Individual) Members.

Report of Treasurer—H. M. Brundage, Consolidated Gas Company of New York, New York, N. Y.

Address of the President—D. D. Barnum, Boston Consolidated Gas Company, Boston, Mass.

Amendments to Constitution and By-Laws—Wm. J. Clark, Chairman, Westchester Lighting Company, Mount Vernon, N. Y.

Report of Nominating Committee and Election of Officers—A. P. Lathrop, Chairman, American Light & Traction Company, New York, N. Y.

Report of Time and Place Committee (1923 Meeting)—B. F. Lyons, Chairman, Beloit Water, Gas & Electric Company, Beloit, Wis.

Report of Committee representing A.G.A. Membership in the Chamber of Commerce of the United States of America—C. A. Munroe, National Councilor, The Peoples Gas Light & Coke Company, Chicago, Ill.

Address, "How Far Are We Justified in Applying the Cost of Service Principle in the Gas Industry"—Hon. Carl D. Jackson, Member of the Railroad Commission of Wisconsin and President National Association of Railway and Utilities Commissioners.

Motion Pictures—Showing the A. G. A.'s latest film "Around the Clock with Gas"—Auditorium of Steel Pier.

EXECUTIVE SESSION

(Only Company Member Delegates elegible to attend)

Election of Company Members.

Election of Directors.

Election of 1923 Nominating Committee.
Election of Committee on Resolutions.

Wednesday Morning, October 25, ten o'clock

Report of Committee on Rate Structure—J. D. Shattuck, Chairman, Philadelphia Suburban Gas & Electric Company, Chester, Pa.

Address "Public Relations"—J. S. S. Richardson, City Editor, Philadelphia Public Ledger, Philadelphia, Pa. (Presented for Publicity & Advertising Section.)

Address—Hon. W. D. B. Ainey, Chairman Public Service Commission of the Commonwealth of Pennsylvania, Harrisburg, Pa.

Report of Committee on Accident Prevention—Charles B. Scott, Chairman, Bureau of Safety, Chicago, Ill.

Report of Commission on Resuscitation from Carbon Monoxide Asphyxiation For the Commission—Dr. Yandell Henderson, Dr. Howard W. Haggard, of the Laboratory of Applied Physiology, Yale University, New Haven, Conn.

Thursday Morning, October 26, ten o'clock.

Report of Committee on Standard Gas Appliance Specifications—Wm. T. Rasch, Chairman, Consolidated Gas Company of New York, New York, N. Y.

Address, "The State Committees on Public Utility Information"—B. J. Mullaney, The Peoples Gas Light & Coke Company, Chicago, Ill.

Address, "The Importance of Accounting in Rate Cases"—A. W. Teele, (C. P. A.) Patterson, Teele & Dennis, New York, N. Y. (Presented for Accounting Section.)

Address, "The Plumber and the Gas Industry"—John S. Irvine, President, National Association of Master Plumbers of the United States, Detroit, Mich.

Paper, "The Manufacture and Preparation of Coke"—R. L. Fletcher, Asst. E. of Mfr.

Paper, "The Merchandising of Coke"—W. G. Rich, Manager of Coke Sales, Providence Gas Company, Providence, R. I. (Presented for the Technical Section).

Friday Morning, October 27, ten o'clock

Report of Committee on the President's Address.

Paper, "The Gas Appliance Price Situation"—A. P. Post, General Manager, Interstate Appliance Corporation, Philadelphia, Pa. (Presented for the Commercial Section.)

Paper, "Selling the Gas Bill"—A. C. Fuller, President, Fuller Brush Company, Hartford, Conn. (Presented for the Manufacturers Section.)

Open Forum—(An innovation in the program this year will be the Open Forum. The time so allotted will be taken up with the discussion of management and policy problems. The chair will recognize any member who wishes to present his views or seek information on any subject of such character. Advantage should be taken of this opportunity by the delegates to discuss other important subjects not on the program.)

Closing Remarks.

ACCOUNTING SECTION

(Auditorium, Second Floor Steel Pier, Boardwalk Front)

Tuesday Afternoon, October 24, two thirty o'clock

Opening Remarks and Report of Chairman—Ewald Haase, Milwaukee Gas Light Company, Milwaukee, Wis.

Report of Nominating Committee and Election of Officers—W. H. Pettes, Chairman, Public Service Gas Company, Newark, N. J.

Report of Committee on Consumers Accounting—W. A. Doering, Chairman, Boston Consolidated Gas Company, Boston, Mass.

1. Description of Typical Systems of Consumers Accounting.
2. Critical Analysis of Such Systems from the Standpoint of Organization—Karl Jorgensen, Bureau of Commercial Economics, Chicago, Ill.
3. Description of System "Bookkeeping without Books"—W. H. Cassell, Manager, Dept. of Customers' Accounts, Consolidated Gas Electric Light & Power Company, Baltimore, Md.

Wednesday Afternoon, October 25, two thirty o'clock

Paper, "Consumers' Accounting in the Smaller Utility"—W. G. Murfit, Bucks County Public Service Company, Newton, Pa.

Address, "Uniform Classification of Accounts for Gas Corporations—with special reference to the Requirements of Public Utility Commissions"—Geo. C. Mathews, Chief Statistician, Railroad Commission of Wisconsin, Madison, Wis.

Thursday Afternoon, October 26, two thirty o'clock

Paper, "The Gas Bill Form, Comments and Suggestions"—W. A. Sauer, Comptroller, The Peoples Gas Light and Coke Company, Chicago, Ill.

Report of Committee on Continuous Inventory of Fixed Capital—H. C. Davidson, Chairman, Consolidated Gas Company of New York, New York, N. Y.

Report of Committee on Uniform Classification of Accounts—W. J. Meyers, Chairman, United Electric Light & Power Company, New York, N. Y.

Report of Committee on State Representatives—W. A. Sauer, Chairman, The Peoples Gas Light & Coke Company, Chicago, Ill.

COMMERCIAL AND PUBLICITY AND ADVERTISING SECTIONS

(Meeting Jointly—Vernon Room, Haddon Hall)

Tuesday Afternoon, October 24, two thirty o'clock

Opening Remarks and Report of Chairman (Commercial Section)—A. P. Post, Interstate Appliance Corporation, Philadelphia, Pa.

Report of Nominating Committee and Election of Officers (Commercial Section)—Dorsey R. Smith, Chairman, Consolidated Gas Electric Light & Power Company, Baltimore, Md.

Report of Committee on Sales Stimulation—Wm. Gould, Chairman, Gas & Electric Improvement Company, Boston, Mass.

Report of Chairman (Publicity & Advertising Section)—A. A. Higgins, Providence Gas Company, Providence, R. I.

Paper, "Advertising to Stimulate Sales of Merchandise and Appliances"—J. F. Weedon, Superintendent of Advertising, The Peoples Gas Light & Coke Co., Chicago, Ill.

Report of Committee on Industrial Sales—F. F. Cauley, Chairman, The Peoples Gas Light & Coke Company, Chicago, Ill.

Report of Nominating Committee and Election of Officers (Publicity and Advertising Section)—James P. Hanlan, Chairman, Public Service Gas Company, Newark, N. J.

Wednesday Afternoon, October 25, two thirty o'clock

Address, "Automatic Water Heating"—C. E. Bartlett, Pres.-Mgr. Bartlett & Company, Inc., Philadelphia, Pa.

Address, "Why Gas Companies and the Plumbing Trade Should Cooperate and How"—Wm. J. Woolley, Manager, The National Trade Extension Bureau, Evansville, Ind.

Address, "Salesmanship in Public Relations"—E. J. Cooney, Sales & Service Manager, Lowell Gas Light Company, Lowell, Mass.

Thursday Afternoon, October 26, two thirty o'clock

Address, "Relation of Home Cooking to Gas Sales"—Mrs. Anna J. Peterson, Director, Home Service Department, The Peoples Gas Light & Coke Company, Chicago, Ill.

Paper, "The Two-fold Value of Efficient Application of Industrial Gas"—D. W. Chapman, The Peoples Gas Light & Coke Company, Chicago, Ill.

TECHNICAL SECTION

(Convention Hall—Ocean End of Steel Pier)

Tuesday Afternoon, October 24, two thirty o'clock

Opening Remarks and Report of Chairman—C. N. Chubb, United Light & Railways Company, Davenport, Ia.

Report of Nominating Committee and Election of Officers—R. B. Harper, Chairman, The Peoples Gas Light & Coke Company, Chicago, Ill.

Report of the Committee on Carbonization and Complete Gasification of Coal—L. J. Willien, Chairman, Charles H. Tenney & Company, Boston, Mass.

General Topics for Discussion.*

Wednesday Afternoon, October 25, two thirty o'clock

Report of Committee on Distribution Design—R. C. Cornish, Chairman, American Gas Company, Philadelphia, Pa.

Paper, "Further Presentation of the Doherty Ideal Distribution System"—R. G. Griswold, Chief Tech., H. L. Doherty & Company, New York, N. Y.

Report of Chemical Committee—Dr. J. F. Wing, Chairman, Boston Consolidated Gas Company, Boston, Mass.

Report of Committee on Deposits in Gas Pipes and Meters—R. L. Brown, Chairman, Bureau of Mines, Pittsburgh, Pa.

General Topics for Discussion.*

Thursday Afternoon, October 26, two thirty o'clock

Report of Committee on Gas Plant and Production—Geo. H. Waring, Chairman, American Public Utilities Company, Grand Rapids, Mich.

Paper, "Some Observations on the Use of the Doherty Washer Cooler as a Water Gas Condenser"—F. W. Steere, Vice-President, Steere Engineering Co., Detroit, Mich.

Paper, "Proper Scrubbing and Condensing Facilities of a Coal Gas Plant and Their Effect upon Tar and Ammonia Recovery"—J. R. Wohrley, Asst. Gas Eff. Foreman, H. L. Doherty & Company, New York, N. Y.

General Topics for Discussion.*

*Arrangements have been made to publish reports of certain Technical Committees in the A.G.A. Monthly. Under the above item—whenever more time is available at a session than is required for the discussion of reports and papers listed—the presiding officer will call for a brief discussion of the work of committees whose reports have been published in the Monthly.

MANUFACTURERS' SECTION

(Auditorium, Second Floor, Boardwalk Front

Monday Afternoon, October 23, two thirty o'clock

Address of Chairman—John S. De Hart, Jr., Isbell-Porter Company, Newark, N. J.

Report of Nominating Committee—George D. Roper, Chairman, George D. Roper Corporation, Rockford, Ill.

Election of Chairman and Vice-Chairman.

Introduction of new officers.

New business.

Adjournment.

Program of Entertainment Features 1922 Convention

The following program has been arranged by the Entertainment Committee:

Tuesday Evening, October 24th

This evening will be given over to an informal get-together on the Steel Pier. There will be general dancing as well as professional entertainment beginning at nine o'clock. Members and their guests will be admitted to the Pier on showing the Association badge or Convention button.

Wednesday, October 25th

The Association will entertain as their guests the ladies attending the Convention at a luncheon and card party at the Seaview Golf Club at one o'clock. Tickets for this function can be obtained at the Registration Desk covering the luncheon and transportation to and from the Club.

The evening of Wednesday, October 25th, has been left open. Atlantic City presents so many varied forms of entertainment that the Committee has thought best not to arrange any official function for this evening.

Thursday, October 26th

The Annual Banquet will be held on this evening in the American Dining Room

of the Hotel Traymore at seven thirty o'clock. Tickets will be on sale at the Registration Desk and our members who desire to attend are urged to make their reservations at as early a date as possible. The price will be $7.00 a ticket which charge covers all the entertainment features during the week as well as the banquet.

Golfing

In addition, arrangements have been made with the Seaview Golf Club so that our members so desiring may have the use of the course during the Convention week up to and including *Friday, October 27th.* Cards of introduction will be available at the Registration Desk. The regular Club charge for greens' fees, etc., will be made.

Cooking Demonstrations and Lectures

On Wednesday and Thursday mornings, October 25th and 26th respectively, Mrs. Anna J. Peterson, Director of the Home Service Department of The Peoples Gas Light & Coke Company of Chicago, will lecture and give cooking demonstrations in the Auditorium of the Steel Pier. Special invitations for these will be issued to the ladies attending the Convention.

Hotel Rates

The rates listed below are reprinted for the convenience and guidance of our members who will attend the Convention. (Editor's Note.)

A—American Plan
E—European Plan

		Rates by the Day							
		Rooms without Private Bath				Rooms with Private Bath			
		For One Person		For Two Persons		For One Person		For Two Persons	
		Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Boardwalk	A—Royal Palace	5.00	8.00	11.00	12.00	8.00	12.00	14.00	20.00
	A—Breakers	8.00	9.00	14.00	16.00	9.00	14.00	16.00	26.00
	E—Breakers	2.50	4.00	4.00	7.00	4.00	9.00	7.00	16.00
	A—St. Charles	6.00	7.00	11.00	12.00	8.00	12.00	14.00	14.00
	A—Gerstel's Blackstone	6.00	7.00	10.00	12.00	7.00	8.00	12.00	14.00
	E—Gerstel's Blackstone	2.50	3.00	5.00	6.00	3.50	4.00	6.00	7.00
	A—Seaside	6.00	8.00	12.00	15.00	7.00	8.00	14.00	16.00
	A—Strand	6.00	8.00	11.00	13.00	7.00	11.00	12.00	16.00
	A—Haddon Hall	6.00	8.00	12.00	14.00	——	10.00	13.00	18.00
	A—Chalfonte	6.00	8.00	12.00	14.00	——	10.00	13.00	18.00
	E—New Belmont	3.00	5.00	4.00	5.00	——	——	6.00	8.00
	A—Alamac	6.00	8.00	10.00	14.00	9.00	12.00	14.00	20.00
	E—Alamac	2.00	4.00	4.00	6.00	5.00	8.00	7.00	12.00
	A—Traymore	8.00	9.00	14.00	14.00	10.00	21.00	16.00	28.00
	E—Traymore	4.00	5.00	6.00	6.00	6.00	16.00	8.00	18.00
	E—Apollo	2.00	——	3.00	——	——	——	6.00	——
	A—Brighton	8.00	10.00	15.00	18.00	10.00	12.00	17.00	24.00
	A—Marlborough-Blenheim	8.00	9.00	14.00	15.00	11.00	14.00	16.00	25.00
	E—Marlborough-Blenheim	5.00	6.00	7.00	8.00	8.00	11.00	9.00	18.00
	A—Dennis	7.00	8.00	11.00	12.00	10.00	12.00	14.00	21.00
	E—Shelburne	3.00	4.00	5.00	6.00	4.00	8.00	7.00	15.00
	A—Ritz Carlton	——	——	——	——	10.00	16.00	18.00	26.00
	E—Ritz-Carlton	——	——	——	——	5.00	10.00	7.00	14.00
	E—Ambassador	——	——	——	——	5.00	13.00	8.00	16.00
	A—Chelsea	8.00	9.00	14.00	16.00	9.00	12.00	16.00	20.00
Massachusetts Avenue	A—Gerstels-Leland	5.00	6.00	10.00	12.00	6.50	7.00	12.00	14.00
	E—Thurber	1.50	2.00	2.50	3.00	——	——	——	——
New Jersey Avenue	A—Grossman's	6.00	7.00	10.00	12.00	7.50	8.50	13.00	15.00

St. Charles Place	A—Raleigh	4.00	5.00	8.00	10.00	6.00	7.00	12.00	14.00
	E—Raleigh	1.50	2.50	2.50	4.00	3.50	4.00	5.00	6.00
Maryland Ave.	A—Goodfellow	4.00	—	7.00	—	—	—	8.00	—
	E—Goodfellow	2.00	—	3.00	—	—	—	5.00	—
Virginia Ave.	A—Calvert	4.00	—	7.00	—	5.00	—	10.00	—
	E—Calvert	2.00	—	3.00	—	4.00	—	8.00	—
	A—Avon Inn	4.00	5.00	7.00	8.00	6.00	7.00	10.00	12.00
	E—Avon Inn	2.00	2.50	3.00	4.00	3.50	5.00	5.00	6.00
	A—Bothwell	4.50	5.00	8.00	9.00	6.00	7.00	10.00	12.00
	E—Bothwell	2.50	3.00	3.00	4.00	4.00	5.00	6.00	7.00
	A—Wiltshire	5.00	6.00	10.00	12.00	—	—	12.00	14.00
	E—Sothern	1.50	2.00	2.00	2.50	—	—	5.00	6.00
	A—Morton	4.50	5.00	8.00	10.00	6.50	7.00	11.00	13.00
	A—Shoreham	3.50	4.00	7.00	8.00	5.00	6.00	9.00	10.00
	E—Shoreham	1.50	2.00	2.50	3.00	3.00	3.50	5.00	6.00
	A—Clarendon	4.50	5.00	9.00	10.00	6.00	7.00	10.00	12.00
	E—Clarendon	2.00	3.00	3.00	5.00	3.00	3.50	5.00	6.00
Penna. Ave.	A—St. Clair	4.00	4.50	8.00	9.00	—	—	10.00	11.00
N. Carolina Ave.	E—Y. W. C. A.	1.50	2.00	—	—	—	—	—	—
South Carolina Avenue	A—New England	4.00	4.50	7.00	9.00	6.00	7.00	10.00	12.00
	E—New England	2.00	2.50	3.00	5.00	4.00	5.00	6.00	8.00
	A—Silverside	3.50	6.00	6.00	—	—	—	—	—
	A—Watkins	3.00	3.50	5.00	8.00	4.00	6.00	8.00	12.00
	A—Radnor	2.00	2.50	4.00	5.00	—	—	—	—
	E—Radnor	1.00	1.50	2.00	3.00	—	—	—	—
	A—Mullica	3.00	3.50	6.00	7.00	—	—	—	—
	E—Mullica	1.00	1.50	2.00	3.00	—	—	—	—
	A—Trexer	3.00	4.00	5.00	6.00	5.00	6.00	9.00	10.00
	A—Iriquois	—	4.00	—	6.00	—	6.00	—	10.00
	E—Iriquois	—	2.00	—	3.00	—	3.00	—	4.00
	A—Windsor	4.00	5.00	7.00	9.00	—	—	10.00	11.00
	E—Windsor	2.00	3.00	4.00	5.00	—	—	7.00	8.00
Ocean Ave.	A—Bon Air	3.75	4.00	7.00	7.50	—	—	—	—
Tennessee Avenue	E—Delaware City	1.50	—	2.50	—	—	—	—	—
	E—Lovan	2.00	—	3 00	—	—	—	—	—
	A—Elberon	4.00	5.00	7.00	9.00	6.00	7.00	10.00	12.00
	E—Elberon	2.00	3.00	3.00	4.00	—	4.00	5.00	7.00
	A—Continental	4.00	5.00	8.00	9.00	6.00	—	10.00	12.00
	E—Continental	1.50	3.00	3.00	5.00	4.00	—	7.00	8.00
	E—Fredonia	2.00	2.50	3.00	5.00	3.00	3.50	4.00	7.00
St. James Place	A—Flanders	4.00	4.50	8.00	8.00	—	—	—	—
	A—Elwood	4.00	6.00	—	—	—	—	—	—
	E—Elwood	1.50	3.00	—	—	—	—	—	—
New York Ave.	A—New Holland	3.00	4.00	5.50	7.00	4.00	5.00	7.00	9.00
Kentucky Ave.	A—New Clarion	4.50	6.00	8.00	9.00	6.00	7.00	10.00	14.00
	A—DeVille	4.50	5.00	9.00	10.00	—	—	12.00	14.00
	A—Monticello	3.50	5.00	7.00	9.00	5.50	7.00	10.00	12.00
	E—Monticello	1.50	3.00	3.50	5.00	2.50	3.00	4.00	5.00
	A—Boscobel	5.00	—	8.00	—	—	—	12.00	15.00
	E—Boscobel	3.00	4.00	4.00	5.00	—	—	—	—
	A—Kentucky	4.00	5.00	7.00	10.00	6.00	7.00	10.00	12.00
	E—Kentucky	2.50	4.00	4.00	7.00	4.00	5.00	8.00	9.00
	A—Normandie	4.00	5.00	6.00	7.00	6.00	7.00	10.00	12.00
	A—Wellsboro	3.50	5.00	7.00	10.00	5.00	6.00	10.00	12.00
	E—Wellsboro	1.50	2.50	3.00	5.00	3.00	4.00	6.00	7.00
	A—Westminster	4.00	4.50	7.00	8.00	4.50	5.00	9.00	10.00
	A—Richmond	4.00	4.50	8.00	9.00	—	—	—	—
	A—Sterling	4.00	5.00	7.00	10.00	—	—	10.00	12.00
	A—Healey's Hotel	2.75	—	5.50	—	—	—	—	—
	E—Healey's Hotel	1.00	—	2.00	—	—	—	—	—
Illinois Avenue	A—Craig Hall	4.00	5.50	7.50	8.50	5.50	6.50	9.50	10.00
Park Place	A—Glaslyn Chatham	4.00	4.00	8.00	8.00	6.00	—	10.00	—
	A—Cheltenham-Revere	4.00	5.00	8.00	10.00	6.00	8.00	10.00	12.00
	A—Runnymede	5.00	5.00	10.00	10.00	—	—	12.00	12.00
Michigan Ave.	A—Pennhurst	4.50	5.00	9.00	10.00	7.00	7.00	12.00	14.00
	A—Arlington	3.00	5.00	6.00	10.00	6.00	7.00	10.00	12.00
	E—Arlington	1.00	2.00	3.00	4.00	3.00	4.00	5.00	6.00
Arkansas Ave.	A—Lexington	4.00	6.00	7.00	10.00	6.00	8.00	10.00	12.00
	E—Lexington	1.50	3.00	2.00	5.00	4.00	6.00	5.00	8.00
	A—Osborne	3.00	4.50	5.00	9.00	4.50	5.50	8.00	10.00
	E—Terminal	1.50	2.50	2.50	3.50	4.00	5.00	5.00	6.00
Missouri Ave.	A—Worthington	3.50	4.00	6.00	8.00	—	—	9.00	11.00
	E—Worthington	1.50	2.00	2.00	4.00	—	—	5.00	6.00
Pacific Ave.	A—Mt. Vernon	3.00	3.50	5.00	6.00	5.00	—	8.00	—
	E—Mt. Vernon	1.50	2.00	2.00	3.00	2.50	—	4.00	—
	A—Eastbourne	4.00	5.50	8.00	9.00	7.00	8.00	10.00	12.00
	A—Plaza	4.50	5.50	9.00	11.00	6.50	8.00	12.00	14.00
	A—Godwin	3.00	—	5.00	—	5.00	—	7.00	—
	E—Godwin	2.00	—	3.00	—	3.00	—	5.00	—
	A—Arondale	3.00	4.00	6.00	8.00	—	—	—	—
	E—Arondale	1.50	2.00	3.00	4.00	—	—	—	—

Nominating Committee Reports

The committees appointed for the purpose of selecting candidates for the offices of Chairman and Vice-Chairman of the various sections submit the following unanimous report:

ACCOUNTING SECTION

For Chairman, J. W. Heins, The United Gas Improvement Co., Philadelphia, Pa.

For Vice-Chairman, W. A. Sauer, The Peoples Gas Light & Coke Co., Chicago, Ill.

(Signed) W. H. Pettes, Chairman
A. P. Post
A. L. Fossell

ADVERTISING SECTION

For Chairman, B. J. Mullaney, The Peoples Gas Light & Coke Co., Chicago, Ill.

For Vice-Chairman, J. M. Bennett, The United Gas Improvement, Co., Philadelphia, Pa.

(Signed) Jas. P. Hanlan, Chairman
P. B. Wiske
W. J. Welsh

COMMERCIAL SECTION

(Report not received)

MANUFACTURERS SECTION

For Chairman, F. A. Lemke, The Humphrey Co., Div. Ruud Mfg. Co., Kalamazoo, Mich.

For Vice-Chairman, G. W. Parker, Russell Engineering Co., St. Louis, Mo.

(Signed) George D. Roper, Chairman
D. J. Collins
Donald McDonald

TECHNICAL SECTION

(Report not received)

Legitimate Investment

The following is from an abstract of the address of the Hon. Carl D. Jackson, at the Annual Convention of the N. E. L. A. at Atlantic City, as printed in Public Service Management. (EDITOR'S NOTE).

PROBLEMS of regulation are coming to be better understood, and commissions and courts are breaking away from such doctrines as theoretical loss in value through so-called depreciation and the arbitrary cutting down of legitimate investment for the purpose of meeting a theoretical loss in value having no relation to cost of retirement and that will never occur, which cutting down of investment can only add to any possible difficulty of meeting any loss in retirements if it should occur. It is to be hoped that the uniform system of accounts proposed by the National Association of Railway and Utilities Commissioners may be generally adopted and become the basis of a more uniform and fair treatment of such questions. Another error that is sometimes made is in treating 'investment' as though it were synonymous with 'original cost,' the latter term meaning original cost of physical property still existing. Often 'investment' and 'original cost' may mean the same thing, but sometimes they may be materially different. Investment may be absolutely necessary, especially in the earlier years of enterprise which represents something beside the original cost of tangible property. Most of the commissions have recognized this fact, though no general rule seems to be possible, and the commissions, it seems to me, rightly scrutinize claims of this nature with care, recognizing such claims only where equity pretty clearly calls for that treatment."

OPEN FORUM CONFERENCE OF STATE COMMITTEES ON PUBLIC UTILITY INFORMATION THURSDAY AFTERNOON, OCTOBER 26, TWO-THIRTY O'CLOCK ROOM 17, HOTEL CHALFONTE

Delegates and guests are cordially invited to attend this conference and participate in the discussions. The State Committee movement is a national movement of vital consequence to the gas industry. Don't miss this opportunity to acquaint yourself with the progress that is being made in twenty-six States of the Union.

PROGRAM

Paper—"The State Committee: What It Is and How It Functions"—Joseph B. Groce, Director, New England Committee on Public Utility Information.

Discussion—John C. Mellett, Director, Indiana Committee; Alfred Fischer, Director, Michigan Committee; J. B. Sheridan, Director, Missouri Committee; Paul Warwick, Director, Georgia Committee; O. D. Hall, Director, Oklahoma Committee.

Paper—"The New State Committee: Problems Met in Getting It Started"—Joe Carmichael, Director, Iowa Committee on Public Utility Information.

Discussion—F. W. Crone, Director, New York Committee; Ross Murphy, Director, Tennessee Committee; George McQuaid, Director, Texas Committee; Geo. E. Lewis, Director, Rocky Mountain Committee; N. W. Brockett, Director, Washington Committee.

Paper—"The Old State Committee: Problems Met After Getting It Started"—Benjamin E. Ling, Director, Ohio Committee on Public Utility Information.

Discussion—Horace M. Davis, Director, Nebraska Committee;Frantz Herwig, Director, Wisconsin Committee; E. F. Kelley, Director, Kentucky Committee; Earle W. Hodges, Director, Arkansas Committee.

New Members

GAS COMPANIES

Southern Minnesota Gas & Electric Company,
L. O. Gordon, Vice-Pres. & Gen. Mgr.,
Albert Lea, Minn.

St. Charles Lighting Company,
J. W. Tierney, Mgr.,
St. Charles, Mo.

MANUFACTURERS

The Merrill Company,
H. R. MacGregor, Eastern Mgr.,
New York.

To the Members of the Association

Your Committee on Cast Iron Pipe Standards has, as part of its duties, to report each year to the Annual Meeting the experiences of its members up to date with the No. 2 (formerly "B") Bell for cast iron pipe. The Committee has no method of obtaining this information except directly from the person using the bell. If you have used any of these bells and will at once supply me with the information called for below, the Committee will be able to comply with the request of the Association.

WALTON FORSTALL,
Chairman.

Experience with No. 2 Bell for Cast Iron Pipe

Name of Company .....

Size of pipe ..... Length of line ..... Kind of joint .....

Date laid ..... No. of leaking joints to date .....

Remarks: .....

(The above record should include every line laid with the No. 2 Bell, whether in 1922, 1921 or 1920.)

Annual Convention

of the

National Association of Railway and Utilities Commissioners

Hotel Fuller, Detroit, Mich., November 14-17, 1922

The date of the 34th Annual Convention of the National Association of Railway and Utilities Commissioners which was originally scheduled for September 26, will, according to an official announcement of the Association, be held November 14-17 at the Hotel Fuller, Detroit, Mich.

The Association has invited representatives of regulated industries to address the convention and on Thursday morning, November 16, Mr. Henry L. Doherty will discourse on "Gas."

As in other years the American Gas Association will be represented at the Detroit meeting of the Utility Commissioners by the following committee:

R. B. Brown, Milwaukee, Wis.—Chairman
H. M. Brundage, New York, N. Y.
H. C. Abell, New York, N. Y.
W. A. Doering, Boston, Mass.
Jas. F. Lawrence, New York, N. Y.
Geo. H. Waring, Grand Rapids, Mich.

GENERAL

CHAIRMEN OF GENERAL COMMITTEES ORGANIZED TO DATE

Accident Prevention—CHARLES B. SCOTT, Chicago, Ill.,
Amendments to Constitution—WM. J. CLARK, Mt. Vernon, N. Y.
American Engineering Standards Committee, Representative on—A. H. HALL, New York, N. Y.—(Alternate Representative) W. J. SERRILL, Philadelphia, Pa.
Award of Beal Medal—D. D. BARNUM, Boston, Mass.
Calorific Standards—J. B. KLUMPP, Philadelphia, Pa.
Chamber of Commerce, Membership in—CHARLES A. MUNROE, Chicago, Ill., National Councillor.
Cooperation with Educational Institutions—F. C. WEBER, New York, N. Y.
Finance—E. H. ROSENQUEST, New York, N. Y.
Gas Safety Code—W. R. ADDICKS, New York, N. Y.—(Alternate Representative) DONALD MCDONALD, New York, N. Y.
Geographic Sections—L. R. DUTTON, Jenkintown, Pa.
National Fire Protection Association—W. R. ADDICKS, New York, N. Y.
Rate Fundamentals—R. A. CARTER, New York, N. Y.
Rate Structure—J. D. SHATTUCK, Chester, Pa.
Standard Gas Appliance Specifications—W. T. RASCH, New York, N. Y.
United States National Committee of the International Commission on Illumination, Representative on—HOWARD LYON, Gloucester, N. J.
Nominating—A. P. Lathrop, New York, N. Y.

A Gas Company's Home Economics Department

PHILMER EVES, Advertising Manager, New Haven Gas Light Company, New Haven, Conn.

THE maintenance of cordial and cooperative relations with the public is recognized as one of the vital functions of a public utility. In seeking means of bringing about these mutually beneficial relations there is no agency that is more necessary or more productive of profit, both to the public and the utility, than education in the efficient use of the commodity sold and in the economical operation of the appliances used.

Probably the most far-reaching and popular of these educational agencies is the gas company's Home Economics Department. Cooking demonstrations and classes for housewives, home instruction in the proper use of domestic gas appliances, and education of salesmen in the economical use of gas ranges have been carried on by many gas companies. Philadelphia, Chicago, Brooklyn and a few other cities have done memorable work along these educational lines.

The development or expansion of the Home Economics Department, however, has not hitherto been generally attempted on any considerable scale.

The New Haven Gas Light Company has now a comprehensive department of home economics service. The general scope is the outcome of the experience of the writer in two other cities. The efforts at that time were confined principally to organized cooking demonstrations at the gas company's offices, at churches, public institutions and other available places and to the establishing of a model kitchen, a library of cook books and a bureau of home instruction, with several so-called instructors or "demonstrators" assisting in the work. In one city a second floor room over the gas company's offices was used for instruction to the pupils of the public school

cooking classes and women's clubs and for some of the public cooking demonstrations.

In New Haven this work has been considerably augmented. A portion of the second floor of the gas company's building was utilized. As the work was expanded additions were made to the hall and a complete equipment installed with an attractive all-white demonstration and lecture platform, model kitchen, comprehensive library of cook books, dining tables, linen, culinary utensils, china, urns and complete demonstration outfit. This Home Economics Department is a busy and thoroughly organized institution. Adjoining the assembly hall and kitchen is the office of the advertising manager, who has charge of the work.

It became quite evident that the goodwill of gas consumers, brought about by these helpful agencies, was being more and more surely consolidated into a recognized and valuable asset of the company. As the department became increasingly popular and more extensively known, a number of women's clubs and other organizations were added to the list of the public bodies regularly using the company's assembly hall and kitchen. These organizations hold their meetings, dinners, suppers, food sales, demonstrations, lectures, classes, etc., in the gas company's rooms, thus bringing to the company wholesale appreciation and friendly support.

The steady growth of these activities made it necessary to further extend the equipment and service and to supplement

the library of cook books with the latest and best works both for adults and girls. The cook books for juniors became popular especially with the pupils of the public school domestic science classes. The organization known as the New Haven Woman's Club Home Economics Branch has continued throughout the past seven years to hold its meetings, lectures and demonstrations in this assembly hall and to utilize the gas company's Home Economics Department equipment. Throughout this period the company, with the marked interest and goodwill of housewives, cooks, teachers and students at the cooking schools and many others, has continued its public cooking demonstrations. These have been held on Wednesday afternoons, throughout the year except during the three summer months. During the last four years 13,401 women were present at these meetings.

In reaching out into this richly productive field it was found that the cooperative work of the company with the architects of the city could be more successfully and helpfully carried on, to the mutual advantage of all concerned, by having the Architectural Club adopt the gas company's assembly hall as its headquarters. The offer was therefore made to and accepted by the architects and the club held its meetings in the company's assembly hall. As the club grew to larger proportions and activities, however, a separate clubroom became necessary. In moving into the new quarters the club elected the writer an associate member of the Architectural Club and afterwards as a member of the Board of Directors. Incidentally it may be mentioned that when the club leased its new rooms and the question of lighting came up, the architects decided to

adopt semi-indirect gas lighting exclusively.

Sometime after the architects began to hold their meetings in the gas company's rooms, the New Haven Chapter American Association of Engineers accepted the company's offer to use the assembly hall as the association's regular meeting place. This body of influential men is still utilizing the service.

The press notices and the frequent account of the activities of the Home Economics Department brought other applications for the use of the hall and its free service, until the present limit of this service has been reached.

The following organizations held meetings, demonstrations, lectures, food and fancy article sales, luncheons, dinners, suppers, classes, etc., in the gas company's rooms during the past year.

New Haven Woman's Club Home Economics Department
New Haven Woman's Club Houshold Art Department
New Haven Woman's Club Food and Clothing Sales

Economy Club (Business women of New Haven)
Sunshine Societies—Cynthia Westover Branch
Sunshine Societies—International Branch
Sunshine Societies—Mayflower Branch
Sunshine Societies—Universal Branch
Daughters American Revolution, Eve Lear Chapter
American Association of Engineers
Master Plumbers, Builders and Painters
New Haven Water Company
Modern Institute of Sewing, Inc.
Daughters of Civil War Veterans
Connecticut Agricultural College
American British Federation
Connecticut Society Civil Engineers
Grand Army of Republic, Memorial Day Dinner
Nurses of Grace Hospital
King's Daughters
Industrial Relations Council
New Haven Power Squadron
Visiting Nurses' Assn.
I. Newman & Sons' Employees
Boy Scouts and friends
Student Nurses Recruiting Movement
Public School Campfire Girls
Boy Scout Executives
British War Veterans
Hejaz Grotto, Rehearsals
Branford Community Council

To some of these clubs and organizations the Home Economics Department gives a supper, informal tea or dinner and these hospitalities are repeated each season. To the Architectural Club the company gave an elaborate 16th Century Dinner, with Pageantry, at the Country Club attended by 130 members of the club and their ladies. The pewter used was loaned from the rare collection of the New Haven Historical Society.

The cost of the informal teas, suppers and various specially prepared foods served at these functions is very small. For the "smokes" offered on many of these occasions, the gas company has got its own specially designed cigar band.

The New Haven County Farm Bureau has utilized the company's home economics equipment for its public lectures and demonstrations in wheat substitutes; conservation of wool and its effect on millinery and clothing; salads; canning, etc.

The Housewives' League discussed marketing at their meetings in the Assembly Hall and were the means of getting a public market established in the city for the sale of farm products.

At the public luncheons given by King's Daughters, the City's Mayor and other officials and influential citizens have been present. One hundred and seventy-five to two hundred and fifty people are served at these popular functions.

The Economy Club of business women which meets in the Assembly Hall serves a supper every Monday evening through the year except in the summer months. These women have educational classes, lectures, pageants, plays, etc. They study millinery, sewing, basketry, home-making, cooking, baking, house-furnishing, marketing and many other useful subjects. Their suppers are prepared each week in the company's model kitchen and paid for by the members by a small assessment. The lectures in Social Hygiene given by a renowned lady physician have been greatly valued. Teachers of the public school domestic science classes, the gas company's instructor and other experts teach the members of the club economical cooking, the gas ranges in the kitchen and assembly hall being used.

The gas company's free cooking and canning programs have been methodically planned by the domestic science experts in charge. The publication of a

few examples of the subjects dealt with at these meetings may prove helpful to the instructors employed by other gas companies. They have included:

Conservation of Foods—Canning and Preserving;

Preparation of Sea Foods recommended by Food Administration;

Children's Meals;

School Children's Lunch Box;

Sugar Substitutes;

Model Suppers for Thanksgiving, Christmas, Valentine's Day, etc.

Methods of making Potato Pastry;

Model Breakfasts;

Economical Dinners;

Full Dinner Menus;

The Way to Use the Gas Range with the Greatest Success Economically;

Lenten Luncheons;

Springtime Recipes;

Requested Recipes;

Special Holiday Recipes;

Extras for Christmas Dinners;

Invalid Diet;

Meals for Convalescents;

Desserts for Warm Weather;

"Thrift" Recipes.

At some of the gas company's demonstrations a dining table is placed by the side of the platform, furnished and trimmed in model form to illustrate the proper service for luncheons, dinners, suppers, holiday parties, etc.

At Thanksgiving a big pumpkin pie is made the attraction. This is baked in a specially made deep pie tin two feet in diameter. The window exhibit of the giant pumpkin creates an interest in the meetings and also attracts attention to the company's salesroom.

Another of the interesting and novel uses to which the Home Economics Department has been put are the cooking competitions among the most competent girl graduates of the domestic science schools of different communities in New Haven County, organized by Connecticut Agricultural College and the Farm Bureau. Prizes offered in these contests have brought out some remarkably clever girl cooks. The gas company's domestic science instructor is selected as one of the judges. What a nucleus these prize winners would soon be for a class of instructors for service with gas companies in teaching at the home the use of the gas range and other domestic appliances! These competitions were planned by Miss Dorothy S. Buckley, Nutrition Specialist of the Extension Service of the Connecticut Agricultural College. Members of the American Gas Association will remember the wonderful work accomplished by Miss Buckley in the Home Economics Department of the Brooklyn Union Gas Company. Miss Buckley's interest in the work of the New Haven Gas Light Company's Home Economics Department has been highly valued by the company and the women of New Haven.

During one season the New Haven company's domestic science experts gave a free course of mid-day cooking and baking lessons to the young women employed in the company's various offices. The foods prepared for each lesson, purchased and paid for by the members of the classes, were used as the girls' lunch for the day, thus combining useful instruction and practical economy.

The announcement of the company's free lessons and practical demonstrations in the canning and preserving of foods, especially during the war, was even more heartily welcomed than anticipated. An official of the National Commercial Gas Association was present at the first of these canning demonstrations

and witnessed the capacity crowd with hundreds of other women vainly trying to get into the assembly hall. Before the close of the canning season, the manager of one of the largest department stores in the city stated that he had sold over 6,500 dozen glass preserve jars! This will give some idea of the popularity and success of the canning movement. At that time the National Commercial Gas Association had gotten out some excellent canning folders and posters containing canning recipes for each month from June to October. The wide and carefully planned distribution of these serviceable recipes and instructions in New Haven by the gas company, coupled with the company's home economics department service, was said to be responsible for much if this success.

The Home Economics Department is useful for trying out new gas ranges and other appliances. Sales managers of gas companies look out for gas range efficiency which minimizes complaints of gas consumers. By gradually eliminating from the market inferior goods that cause dissatisfaction, gas appliances are popularized and more comprehensively used, while the cost of maintenance and instruction is lowered. The standardizing of appliances by the Association has resulted in an increase in public confidence and in a willingness to pay the price of high quality. Gas consumers buying these superior appliances value more highly than ever the Home Economics Department and its free instruction service which brings about a more economical and comprehensive use of the appliance, resulting in better meals and greater contentment in the homes.

The lectures held in connection with some of the meetings call for lantern slide illustrations. The company therefore made provision for these occasions and provided a permanent folding screen and complete socket connections.

Several branches of the Sunshine Societies continue to hold their meetings and sales to raise funds for philanthropic purposes. Appreciation for the gas company's Home Economics Department's service was shown in a marked way when the lady president of the society reported the gas company's generous cooperative service to the International Convention in Grand Central Palace, New York City.

The informal teas and receptions tendered by the Home Economics Department to these Sunshine and other societies, which are always quite homelike and inexpensive, have brought about a warm feeling toward the gas company.

The Household Arts Department and the Home Economics Department of the New Haven Woman's Club and the American Society of Engineers, New Haven Chapter, publish the gas company's invitations and hospitalities in their Year Books and notices of the meetings. The former of these clubs held a weekly class in millinery in the company's hall during a whole season and created considerable interest among the influential women of the city in the movement.

Reports of the gas company's entertainments and suppers to the Veterans of the Grand Army of the Republic are read at the meetings of the veterans' Posts. The Memorial Day Luncheon to these old soldiers of the Civil War and the sons of veterans given by the "Daughters of Veterans" in the company's Home Economics Department was impressive and memorable. The hall was filled from early morning until sun-down with the busy activities connected with this event. The gratitude for the company's interest and cooperation was very marked.

The company has on file many letters from clubs and societies expressing appreciation of the Home Economics Department's co-operative service. One of these letters will show the general tone of friendliness and appreciation. This letter refers to the 16th Century Dinner with Pageantry given by the New Haven Gas Light Company to the Architectural Club of New Haven:

The Architectural Club of New Haven
Incorporated

31 January 1922.

The New Haven Gas Light Co.,
80 Crown Street,
New Haven, Conn.

Attention Mr. J. Arnold Norcross.

Gentlemen:

At the last meeting of The Architectural Club of New Haven, Inc., the attached resolution was unanimously passed.

While this resolution expresses the appreciation of the club members for the wonderful evening spent by them and their wives and lady friends as the guests of The New Haven Gas Light Co., I just wish to add my personal appreciation on behalf of the many members, and Mrs. Appel and myself.

The evening was one of which the memory will long remain with us. It is still being spoken of by all whenever we meet.

Great credit is due your Mr. Philmer Eves for his interest and care to see that every minute detail was carried out, and for the great amount of work which I personally know he put into the affair.

Again allow me to thank the Directors, Mr. Eves, and all in The New Haven Gas Light Co., who made this wonderful affair possible to The Architec-

tural Club of New Haven, and its friends, and remain

Very respectfully,
(Signed) T. O. APPEL,
President.

Copy of Resolution

WHEREAS, The New Haven Gas Light Company entertained over a hundred of our members and ladies at the New Haven Country Club on January 10th, and

WHEREAS, The portraying of 16th Century conditions, as to setting, dress, customs, and even food, was carried out in faithful accordance with historic records, leaving the impression in our minds that we had been actually living at that time, and

WHEREAS, The wonderful success in producing the entire entertainment was largely due to the conscientious study given to 16th Century life by Mr. Philmer Eves, as well as his thoughtfulness, care and executive ability in providing every detail, and

WHEREAS, The entertainment was made more enjoyable and realistic by the harp playing of Mrs. Edith Jones, now therefore be it

RESOLVED, that The Architectural Club of New Haven express its hearty appreciation of the hospitality of the New Haven Gas Light Company and extends its gratitude to Mr. Eves, Mrs. Jones and all who helped to produce the effect, and be it further

RESOLVED, that a copy of these resolutions be sent to the New Haven Gas Light Company, to Mr. Philmer Eves and Mrs. Edith Jones; and that they be spread on the minutes of the meeting.

(Signed) PHILIP SELLERS
A. M. THOMAS
J. DELLA VALLE

For four years the Home Economics Department carried out a mutually beneficial arrangement with the Young Women's Christian Association. The services of the director of the association's domestic science department were tendered and accepted for the gas company's demonstrations. This competent lady as director and "demonstrator" became very popular. Her programs, apt sayings, and able instructions were eagerly published by the press and read throughout the community.

The Booklet of "Helpful Information" published by the company as a coordinating instruction service was also highly valued by housewives and cooks. These booklets were distributed to the women attending the cooking meetings and were also delivered by the "home instructors" to the women who had purchased gas ranges. The company's earnest desire to help its patrons to have the most efficient gas service has surely brought to the company kindly feeling and increased patronage.

Many lecturers who have used the equipment of the assembly hall and model kitchen and vistiors from other cities have warmly expressed their delight at the complete and attractive appointments and have passed along the news, thus steadily adding to the publicity of the gas company's fair and liberal dealings wth the public.

The assembly hall and kitchen are utilized by the company for the social gatherings, dinners and meetings of employees. Get-together social functions and educational classes for employees have been among the advantages and appreciated services of the Home Economics Department.

Illustrated talks given in the assembly hall by the writer have been repeated by request to large audiences at several of the churches of the city. These have brought additional friendliness and helped to make the department extensively known and patronized.

The Farm Bureau's Rehearsals for moving pictures given at the theatres by boys and girls of the county, illustrating home gardening, stock and poultry raising, etc., have been held in the company's assembly hall.

Lectures on sewing (with moving pictures) are given to the women of the Economy Club. These are given as a free service by the Institute of Modern Sewing.

The Home Economics Department's white all-gas kitchen has been utilized by Winchester Repeating Arms Company for posing the girl models who illustrate in national advertisements the corporation's household manufactures.

The New Haven Water Company, the New Haven Bank and other public bodies hold their employees' and clubs dinners, suppers, etc., in the assembly room.

The Order of True Sisters (Jewish) use the kitchen to educate the Camp Fire Girls in cooking and in the preparation of emergency meals.

During the first three months of this year 72 meetings were held, an average of 24 per month, equivalent almost to a meeting every working day.

The gas fitters and helpers who meet weekly in the fitting shop for instruction and helpful talk on the week's work, occasionally hold their meetings in the large hall.

The kitchen and its gas range, cabinets, refrigerator, domestic gas irons and board, gas toasters, waffle irons, china, cutlery and glassware are a free service to the women employed in the company's offices. Here some of the women get their meals and learn cooking.

A room adjoining the assembly hall is set apart as a rest room for women employees. There is also a medicine cabinet with simple remedies and first aid equipment.

The New Haven Press has been liberal in its reports of the doings of the Home Economics Department. Announcements, reports of meetings, publication of recipes and illustrated feature stories have been found to be of considerable interest to the public, and instrumental in bringing other societies and organizations to the gas company's rooms. The following summary is an indication of this general interest in the Home Economics Department.

Press Notices in New Haven

Year 1918	310
Year 1919	392
Year 1920	477
Year 1921	594
Half year to June 30 1922	459
	2232

While this busy department has been thus actively and profitably engaged, the work has been supplemented by instruction at the homes. Many women who have experienced difficulties in baking and cooking have expressed a wish for the instructor to call and give expert advice and assistance. These home instructions during the years 1915 to 1921 inclusive numbered 25,072.

Pupils of the domestic science department of the public schools, "the housewives of the future," have an important bearing on the gas industry. Before long they will have homes of their own. It is therefore considered of peculiar importance that these students receive instruction in the efficient use of domestic gas cooking appliances. In New Haven visits are made to the school cooking classes where the girls are shown the construction and proper adjustment of the burners. The classes visited general-

ly comprise the older (8th grade) students. The individual gas stove burners around the tables and the burners of the gas range are described. These are manipulated to show the flame that gives the most heat, does the work in the shortest time, gives the best results and saves gas. The pupils are then urged to see that the gas ranges in their homes are adjusted properly and to explain to their mothers the waste of gas that can be easily avoided, as the gas company wishes everybody to have the best and most economical gas service. The slogan is "Help Mother." At each school the pupils are given a copy of an illustration of a model kitchen and a larger view of this beautiful kitchen is placed on the walls of the school room.

The practical good accomplished by the work of the Home Economics Department and the goodwill and increased sale of gas which it creates brings up once again the question of the great need of a similar department or bureau in connection with the American Gas Association. It is a fact worth remembering that there is no direct association agency dealing with these domestic problems of housewives and cooks. There must be an immense loss of possible gas consumption by the lack of united and nationally organized effort to secure the full and proper use of domestic appliances. The question has been brought up in convention and otherwise by the writer and some action was contemplated and partly taken by the N. C. G. A. A Home Economics Bureau at Association's headquarters would be of incalculable assistance to gas companies. The duties of the appointed director, who would of course necessarily have to be a woman of experience in the work and a college graduate, would in part be:

To establish a working kitchen in which experimental work may be carried on.

To co-operate with the Association's Advertising Department by writing timely articles on homemaking, newer foods, new recipes, ways of saving gas, etc.

To train a number of women in gas range management, cooking, domestic science, etc., to send out to gas companies as they graduate from the class.

To recommend any improvement in construction, design or operation of gas ranges and other cooking appliances.

To draw up monthly recipes on baking, cooking, broiling, canning, etc., for gas company distribution.

To assist by advice and if possible by practical co-operation in establishing home economics departments for gas companies desiring them.

To collect data from gas company home economics departments, so as to pass along to other companies successful plans carried out.

To draw up for general distribution circulars on how to adjust gas ranges properly, how to read the gas meter, how to conserve time, energy and gas in preparing meals by utilizing the ovens and the burners of the gas range to the best advantage.

To plan meals so as to get full food value each day. Assistance thus given to the women in cities and towns would produce an incalculable amount of goodwill and friendliness to the gas companies and would result in better and more scientifically fed communities.

To co-operate with gas companies in securing the co-ordination of women's clubs and other organizations in order to bring about a fuller use of gas cooking appliances.

New Haven, Connecticut,
July 1922.

Associations Affiliated with A. G. A.

Canadian Gas Association

Date of Affiliation—Mar. 25, 1919
Pres.—Col. D. R. Street, Ottawa Gas Co., Ottawa, Ont., Can.
Sec.-Tr.—G. W. Allen, Consumers' Gas Co., Toronto.
Conv., 1923.

Empire State Gas and Electric Association

Date of Affiliation—Nov. 21 1919
Pres.—E. H. Rosenquest, Bronx Gas & Electric Co., Bronx, N. Y.
Sec.—C. H. B. Chapin, Grand Central Terminal, New York, N. Y.
Conv., Lake Placid, N. Y., Oct. 5-6, 1922.

Illinois Gas Association

Date of Affiliation—Mar. 19, 1919
Pres.—R. S. Wallace, Central Illinois Light Co., Peoria, Ill.
Sec.-Tr.—R. V. Prather, 305 Illinois Mine Workers Bldg., Springfield, Ill.
Conv., 1923.

Indiana Gas Association

Date of Affiliation—April 24, 1919
Pres.—F. B. Tracy, Central Indiana Gas Co., Muncie, Ind.
Sec.-Tr.—E. J. Burke, Citizens Gas Co., Indianapolis, Ind.
Conv., 1923.

Iowa District Gas Association

Date of Affiliation—May 21, 1919
Pres.—H. B. Maynard, Citizens Gas & Electric Co., Waterloo, Ia.
Sec.-Tr.—H. R. Sterrett, Des Moines Gas Co., Des Moines, Ia.
Conv., 1923.

Michigan Gas Association

Date of Affiliation—Sept. 18, 1919
Pres.—Fred W. Seymour, Battle Creek Gas Co., Battle Creek, Mich.
Sec.-Tr.—A. G. Schroeder, Grand Rapids Gas Light Co., Grand Rapids, Mich.
Conv.,—1923.

Missouri Association of Public Utilities

Date of Affiliation—June 18, 1920
Pres.—E. R. Locke, Missouri Utilities Co., Mexico, Missouri.
Sec.-Tr.—F. D. Beardslee, 315 N. 12th St., St. Louis, Mo.
Wiley F. Corl, Chmn. Affiliation Com., Missouri Utilities Co., Mexico, Mo.
Conv., 1923.

New England Association of Gas Engineers

Date of Affiliation—Feb. 19, 1919
Pres.—V. E. Bird, Connecticut Power Co., New London, Conn.
Sec.-Tr.—J. L. Tudbury, Salem Gas Light Co., Salem, Mass.
Conv., 1923.

Gas Sales Association of New England

Date of Affiliation—Oct. 1, 1919
Gov.—F. A. Woodhead, Arlington Gas Light Co., Arlington, Mass.
Sec.—M. Bernard Webber, 150 Congress St., Boston, Mass.
Annual Meeting, 1923.

New Jersey Gas Association

Date of Affiliation—April 25, 1919
Pres.—Jacob B. Jones, Bridgeton Gas Light Co. Bridgeton, N. J.
Sec.-Tr.—H. E. Mason, Consolidated Gas Co. of N. J. Long Branch, N. J.
Conv., 1923.

Pacific Coast Gas Association

Date of Affiliation—Sept. 18, 1919
Pres.—Henry Bostwick, Pacific Gas & Electric Co., San Francisco, Cal.
Sec.-Tr.—W. M. Henderson, 812 Howard St., San Francisco, Cal.
Conv., 1923.

Pennsylvania Gas Association

Date of Affiliation—April 10, 1919
Pres.—Luther Gaston, Lebanon Gas & Fuel Co., Lebanon, Pa.
Sec.-Tr.—Geo. L. Cullen, Harrisburg Gas Co., Harrisburg, Pa.
Conv., 1923.

South Central Gas Association

Date of Affiliation—Oct. 15, 1919
Pres.—Frank L. Weisser, San Antonio Public Service Co., San Antonio, Texas.
Sec.-Tr.—S. J. Ballinger, San Antonio Public Service Co., San Antonio, Texas.
Conv., Hot Springs, Ark., Oct. 10-11-12, 1922.

Southern Gas Association

Date of Affiliation—May 20, 1919
Pres.—P. H. Gadsden, The United Gas Improvement Co., Philadelphia, Pa.
Sec.-Tr.—G. H. Smith, City Gas Co., Norfolk, Va.
Conv., 1923.

Wisconsin Utilities Association

Pres.—J. P. Pulliam, Wisconsin Public Service Co., Milwaukee, Wis.
Exec.-Sec.—J. N. Cadby, 445 Washington Bldg., Madison, Wis.
Conv., 1923.

ACCOUNTING SECTION

EWALD HAASE, Chairman — J. W. HEINS, Vice-Chairman

H. W. HARTMAN, Secretary

MANAGING COMMITTEE—1922

At Large

DAVIDSON, H. C., New York, N. Y.
DOERING, W. A., Boston, Mass.
LAWALL, H. J., Philadelphia, Pa.
LAWRENCE, JAMES, New York, N. Y.
MEYER, W. J., New York, N. Y.
PEIRCE, W. H., Newark, N. J.
SAUER, W. A., Chicago, Ill.
SCHMIDT, JR., WM., Baltimore, Md.
SCOBELL, E. C., Rochester, N. Y.
SMART, BURTON, Portland, Me.
STERRETT, W. G., Chester, Pa.
WILSON, P. A., Philadelphia, Pa.

Representing Affiliated Societies

ARMSTRONG, J. J., Toronto, Can. (Canadian)
BORDEN, A. W., Hastings, Nebr. (Iowa)
DEAL, E. C., Springfield, Mo. (Missouri)
HAASE, EWALD, Milwaukee, Wis. (Wisconsin)
HOUGHTON, W. E., Los Angeles, Cal. (Pacific Coast)
HOY, CHAS. W., Glassboro, N. J. (New Jersey)
JAMES, F. M., Aurora, Ill. (Illinois)
McCABE, J. B., Dallas, Tex. (South Central)
NORTON, W. F., Nashua, N. H. (N. E. Gas Eng.)
PORTER, EDW., Philadelphia, Pa. (Pennsylvania)
SCOBELL, E. C., Rochester, N. Y. (Empire State G. & E.)
SHEARON, B. P., Hammond, Ind. (Indiana)
STOTHART, E. C., Charleston, S. C. (Southern)
SWANSON, J. K., Jackson, Mich. (Michigan)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Consumers Accounting—W. A. DOERING, Boston, Mass.
Continuous Inventory of Fixed Capital—H. C. DAVIDSON, New York, N. Y.
Fire Insurance Rates—P. A. WILSON, Philadelphia, Pa.
Nominating—W. H. PEIRCE, Newark, N. J.
Standard Classification of Accounts—W. J. MEYERS, New York, N. Y.
State Representatives—W. A. SAUER, Chicago, Ill.

The Providence Gas Company Offers Its Stock to Its Employees

THE Providence Gas Company some two years ago inaugurated a plan whereby its employees could subscribe to its stock. So successful was it, the entire offering, being subscribed and, at the present time, having been entirely paid in, that they have decided to follow this up with a second offering.

For this purpose two circulars were sent out to all employees and from which we will quote.

The first circular was sent only to those employees who had taken advantage of this first offer and who, moreover, still held this stock. It calls their attention to the fact that the company has certain stock which it is offering its employees and says:—

"We feel that special recognition should now be made of the faith and loyalty of those of our employees who bought stock under the plan of November 15, 1920, and who on September 15, 1922, are still owners of the stock so acquired. Consequently, in this blue circular, sent to all such employees, we are offering an opportunity to subscribe for these shares at the original price of $50.00 per share. It will be necessary to ascertain how many desire to subscribe for these shares in order to distribute them as equitably as possible among the eligible employees.

"As a tentative basis subscriptions should be made as follows:

Stock held under plan of Nov. 15, 1920	Entitled to subscribe to $50.00 per share
1 to 4 shares	1 share
5 to 7 shares	2 shares
8 to 11 shares	3 shares
12 to 15 shares	4 shares

"You will understand that the offer in

this blue circular is entirely independent of the offer outlined in the white circular of even date; if on September 15, 1922, you are still the owner of stock bought on the plan of November 15, 1920, you are entitled to take advantage of either or both of the two offers now submitted. The terms and conditions of purchase of stock under either plan are the same except as to price, and are plainly set forth in the white circular."

The "White Circular," sent to every employee, clearly outlines the plan of subscription. It says:

"1. WHO MAY SUBSCRIBE. Any person who, on September 15, 1922, shall have been continuously in the service of the Providence Gas Company one year or more may subscribe for one share of stock at $59 per share, for each full Two Hundred Dollars of his annual wages as of that date, but for not exceeding fifteen shares in any instance. If, at the close of business on September 15, 1922, any of the stock set aside for the purpose of carrying this plan into effect shall remain unsubscribed for, it shall be used for filing subscriptions, on the aforesaid terms and conditions, from employees who, on September 15, 1922, shall have been continuously in the service of the Company six months or more. If the stock available is oversubscribed subscriptions will be equitably pro rated. All subscriptions hereunder, must be filed with the Treasurer on or before September 15, 1922.

"2. PAYMENTS. Payments for the stock at the rate of fifty cents per share per week, beginning October 1, 1922, will be deducted from the employee's wages until the stock is paid for. After October 1, 1923, the stock may be paid for in full, if so desired. Certificates will be delivered only when the stock has been fully paid for, and in no event before October 1, 1923.

"3. DIVIDENDS. Subject to Rules 7 and 10, dividends on the stock partially paid for will be credited as payments on account of the subscription price; no interest will be charged on that part of the purchase price remaining unpaid, nor will any interest be credited on installments of the purchase price.

"4. RIGHTS OF FUTURE ISSUES OF SECURITIES. All rights to subscribe for new stock, bonds, or debentures, accruing to stock subscribed for but only partially paid for, shall be sold at market value, and subject to Rules 7 and 10, the proceeds thereof credited as payments on account of the subscription price.

"5. STOCK PARTIALLY PAID FOR NOT TO BE ASSIGNED. The interest of any subscriber in stock purchased under this plan shall not be pledged, assigned or in any manner alienated before such stock is fully paid for and transferred by the trustees to the subscriber. A violation of this provision by a subscriber shall constitute a withdrawal by him from the purchase of the stock in question, and his only right shall be to have the Trustees pay to him, or to the person entitled thereto, the net amount paid in, plus 6 per cent interest from date of payments; upon such payment the purchase agreement shall be cancelled.

"6. DELIVERY OF CERTIFICATES. As each share is fully paid for it will, upon the approval by the Trustees, be transferred to the subscriber, but no such transfer will be made prior to October 1, 1923. Stock so transferred has all the incidents of other stock outstanding.

"7. LEAVING SERVICE. In case

an employee leaves the service of the company before his stock is fully paid for, his purchase agreement shall be cancelled and the net amount paid in, plus interest at 6 per cent per annum from date of payments shall be paid him.

"8. TEMPORARY ABSENCE. Any employee whose name is temporarily taken off the regular pay roll by reason of leave of absence, disability or other reason may, at his option and with the consent of the Trustees:

(A) Cancel his purchase agreement and receive amount to which he would be entitled if permanently leaving the service; or

(B) Continue to make his regular payments to the Trustees. In case an employee elects this option (B) and fails to make payments called for by his purchase agreement, said agreement will be cancelled and he will receive the amount to which he would be entitled if leaving the service permanently.

"9. DEATH. If an employee dies before his stock is fully paid for, his purchase agreement shall be cancelled and the amount standing to his credit on his account shall be paid to his legal representatives.

"10. OTHER CAUSES FOR WITHDRAWAL. If, for any reason other than leaving the service, or temporary absence any employee desires to withdraw from his purchase agreement, he may file application to that effect stating his reasons; if the application is approved by the Trustees, the net amount paid in, plus interest at 6 per cent per annum from date of payments, shall be paid him and his purchase agreement cancelled. In unusual circumstances a subscriber may be permitted, in the discretion of the Trustees, to withdraw from his purchase agreement in part, in which event an equitable adjustment of his account will be made.

"11. TRUSTEES. Until stock subscribed for is fully paid it will be held by three Trustees, to be appointed by the Board of Directors of the Company. The Trustees shall have the power to reject any subscription in their sole discretion, and to make such changes in the details of this plan as they may deem to be for the best interests of subscribing employees, or of the Company, or of any one concerned, but such changes shall be subject to the approval of the Board of Directors.

"12. SPECIAL BENEFITS. One dollar per share per year will be paid to subscribers who remain in the Company's employ and retain their stock. This bonus will be due on October 1 of each year, for a period of five years beginning October 1, 1923. In case of partially paid stock the payment will be tentatively credited on account of the subscription price, and in case of fully paid stock it will be paid to the subscriber during the first week in January during said period, upon presentation of the stock certificate."

This policy has received considerable publicity through the press, one article stating:

"The Providence Gas Company is again offering to employees the privilege to become stockholders in this well managed public utility company" and continuing with an abstracted outline of the plan.

Not only does this offer make it possible for employees to become active "partners" in the company, but it gives them the opportunity of securing this stock, now quoted at the present market at $65.00 per share, at an advantageous price which could not be done in any other way.

Tennessee and Arkansas Appoint Bureaus

Ross Murphy, 413 Chamber of Commerce Building, Nashville, Tenn., has been appointed director of the newly organized Tennessee Public Service Information Bureau. The Arkansas Public Service Information Bureau has employed Earle W. Hodges, 112½ East 7th Street, Little Rock, Ark., as its director. Both bureaus are operating.

Attraction of Utilities for Savings

According to the Oregon Public Service Commission "The public must bear in mind that healthy and growing communities must have healthy and growing utilities; that sound and constantly expanding public utilities are essential to the progress and welfare of the communities served"; and apropos of this the Chicago JOURNAL OF COMMERCE states, "In this day of strict and efficient regulation of public utilities, where the public through its commissioners insures itself of efficient management, sane business dealings, proper financing and a fair return on the monies invested, it does not appear fanciful to conceive a time when popular confidence in the securities of the utilities will make them the commonest method of saving by the masses."

Fighting for the Truth

AT some time in its history almost every business has had to face the same sort of alternative that the late Colonel Roosevelt once faced. A man's character is deliberately slandered, a published statement says his business is owned by foreigners or that his product when used will cause vitiation of the atmosphere or that the industry he depends upon for a living has seen its best day.

Everyone remembers what Roosevelt did. He went to the mat, so to speak, with the man who spread the rumor about his drinking. Result: No more rumors.

Of course a business institution can't make such direct and effective retaliation as did Roosevelt but it can protect its good name and lessen the chances for future attacks by coming right back with the truth. Just as soon as an industry ignores printed misrepresentations and irresponsible attacks upon its integrity, it gives strong evidence of a serious deterioration. Conversely, those industries which are the most prosperous are at the same time the most jealous of their good reputations and the most aggressive in meeting such statements with the truth.

A good example of this is afforded by the Standard Oil Companies and kindred Rockefeller interests. Every criticism of the Rockefellers or Rockefeller institutions is answered by a personal letter, accompanied by such data or evidence as may be necessary to show that the criticism or misrepresentation is unjustified.

No publication, however obscure or innocuous, is overlooked. If the Red Dog Banner of Arizona says that the Rockefellers are grinding the faces off employees of the Bayonne Refinery, Mr. Rockefeller writes the Banner editor at once with full particulars. The same care is taken respecting such remote charges as that John D., Sr., stole the first dollar he ever had from a blind apple seller in Cleveland.

The same policy, only perhaps in less

thorough fashion, is followed today by other big business organizations. Some companies have spent as much as half a million dollars each in a single advertising campaign to run down an injurious rumor and kill it. During the war, one large corporation in the munitions business spent more than one million dollars in nailing a lie concerning the quality of its manufactured products. Had this lie been allowed to circulate without any opposition from the company this concern would have become known as a Benedict Arnold of American business and would have been shunned like poison.

The gas business has long been a favorite target of criticism for a large and varied audience ranging all the way from vote-catching politicians to professional muckrackers, from get-rich-quick speculators to the chronic kicker and malcontent. The first gas trade journals published in this country made frequent mention of the diatribe hurled at the industry. Some years later, when the industry became a real power in the life of our fast growing cities and when, unfortunately, it was mixed up in one or two political squabbles, the volume of censure grew to such proportions that slander and libel became the sport of the hour. Subsequently, libel became a punishable offense and the newspapers, after one or two heavy fines, realized that discretion was the better part of valor and tempered their editorial utterances with such restrictions as "it is reported," "it is alleged," "it is said," "it is claimed," and other explanatory phrases which threw a blanket of protection around them.

Those were the days, however, when "gas barons," "soulless corporations," and other terms still somewhat familiar to the gas men of this generation were coined as the result of a discreet silence maintained by gas company officials when they refused to show their aggressive side. In that period of our development no one ever stayed up very late at night working out programmes of educational publicity to win the public's confidence.

In late years, however, a most significant change has taken place. Indeed, since the year 1919, when the gas industry became organized along national lines, with a national program, a national spokesman, and adequate machinery to deal effectively with all publicity prejudicial to the best interests of the industry, it has made history for itself. Organization along national lines has probably done more for the gas business than any other single movement in its history and it will continue to play an ever increasingly vital part in its future development.

So far as our business is concerned, the day of provincialism has passed, as has also the day of the isolated plant and its still more isolated problems. The interests of the industry now transcend those of the individual and a national contact through a well-knit organization supplemented by state and sectional associations has brought out inherent qualities in the gas man that have wanted an outlet for many years.

For example, there is such a thing as pride in one's calling, a legitimate pride born of honest work well done. Also, every business worthy of the name has traditions and ideals which must be maintained if that business is to survive. We are members of the oldest branch of the public utility business in this country and we have reached a stage in our national development when every man feels it incumbent upon himself to up-

hold the good name of the industry when it is maligned. That is one reason why attacks are showing a steady decline. Recently, when a financial organization made the statement that the gas industry had seen its best days, a veritable flood of protests swept into the office of that organization, giving conclusive proof to the persons responsible for the statement that the gas industry was sufficiently alive to go to the mat with anyone who questioned its prosperity. An exhibition of aggressiveness, such as this was, shows that the industry has a national conscience which will not countenance untruths and misrepresentation of the facts. With that kind of a spirit in evidence, is it any wonder that the gas business is making great strides?

With the exception of one class of newspapers entirely under the editorial persuasion of one individual who is an ardent campaigner for the municipal ownership of about everything on earth, and whose knowledge of the fundamentals of utility financing is still in the elementary stage, we are receiving better treatment at the hands of editors the country over than we ever have before. Printed attacks on the industry are now the exception rather than the rule. Libel is unheard of. When mistakes are made, retractions generally follow without any pressure being exerted other than a simple request for the publication of the facts. Now and then our attention is called to promotional matter which is harmful to the industry and after making our position clear we have found the persons in question willing to make such changes as we suggest.

The bitter cut-throat competition of some years past, when a misguided commercial sense led some of our fellow workers in the utility game to say and print bad things about each other, has been entirely superseded by a new order of things which decrees that it is bad practice to get business at the expense of the other fellow when a minute's reflection will reveal that all parties are concerned in the same business. Gas, street railway, telephone, central station —all are workers in a common cause and are aggressive guardians of the good name of that cause.

A Sermon on the Bee

When some of your salesmen managers complain that it is hard to make sales, and report that it is impossible to find buyers for your products, remind them that a red clover blossom contains less than one-eighth of a grain of sugar, that seven thousand grains are required to make a pound of honey, that a vagabond bee, seeking everywhere for sweetness, must obtain this material from fifty-six thousand clover heads.

Tell them, too, that the bee is compelled to insert its proboscis separately into each floret or flower-tube and that there are about sixty of these to each head.

Remind them that the bee, in performing that operation sixty times fifty-six thousand, or three million three hundred and sixty thousand times, gets only enough nectar for one pound of honey—and then does not get the honey.

THOMAS DREIER.

An Assurance to Consumers Supply of Gas Will Not Fail

The following clipping from the Providence, R. I., Tribune is an example of good publicity secured by one company in the present coal crisis. (EDITOR'S NOTE.)

President Manchester Says Coal Has Been Engaged

PRESIDENT Charles H. Manchester of the Providence Gas Company today made public a statement assuring the customers of the utility company that there would be no shortage of gas this winter because of the coal famine in this country. Mr. Manchester says that the gas company has already contracted for sufficient foreign coal to carry his concern through the winter even though the demands for service are greatly increased because of the shortage of other fuels.

His statement is as follows:

"Many of our customers are wondering whether the gas supply will be adequate this fall to enable them to use it in conserving their coal and coke supply.

"In view of the frequent inquiries as to our ability to maintain our service, I desire to state that I anticipate no interruption in the supply of gas to any of our consumers.

"The British steamer Chiswick arrived at our dock Aug. 18 with 4500 tons of gas coal mined in Durham County, England. Steamers Middleham Castle, Datchet and Ingleby are on the way to us from England with about 5000 tons each of English gas coal. Others are to follow. The Chiswick brought the first foreign gas coal ever used by our company. It is of excellent quality.

"When it became apparent to us that we were facing a serious shortage of coal, even though we had contracts for our season's supply, we immediately took steps to protect our customers against a possible failure in the supply of gas, and purchased 50,000 tons of gas coal in England to be delivered to us in September, October and November. We also filled our gas oil storage tanks and contracted for a year's supply of gas oil from what we believe to be a reliable source of supply. We also bought and stored at our plant sufficient boiler fuel to last well into next spring.

"We believe the English gas coal which we have contracted for, together with such American coal as we may receive from time to time, will carry us through the winter even if the demands on our service are largely increased because of the shortage of other fuels. If not, we shall buy additional English coal.

"Fortunately, we have sufficient manufacturing capacity to produce whatever amount of gas our customers are likely to require, even in the fuel emergency which probably will exist next winter.

"I wish to assure our customers that no effort will be spared to keep our works in operation and I am confident that we shall be able to maintain our past record of keeping up a continuous supply of gas, no matter how great the difficulties. Our company has never failed, even for a moment, to keep up a continuous supply of gas since the gas works started in 1849."

MANUFACTURERS SECTION

JOHN S. DeHART, Jr., Chairman — F. A. LEMKE, Vice-Chairman

C. W. BERGHORN, Jr., Secretary

MANAGING COMMITTEE—1922

At Large

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CLOW, K. S., Chicago, Ill.
COLLINS, D. J., Philadelphia, Pa.
CRANE, WM. M., New York, N. Y.
DEHART, JR., JOHN S., Newark, N. J.
DICKEY, C. H., New York, N. Y.
FERRIS, E. J., New York, N. Y.
GREENE, J. J., New York, N. Y.
GRIBBEL, W. GRIFFIN, Philadelphia, Pa.
KNAPP, F. H., Pittsburgh, Pa.
KOPPER, WM. B., Brooklyn, N. Y.
LEMKE, F. A., Kalamazoo, Mich.
McDONALD, DONALD, New York, N. Y.
ROPER, GEORGE D., Rockford, Ill.
SHERWOOD, J. M., New York, N. Y.
STITES, TOWNSEND, Gloucester, N. J.

Affiliated Representatives

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MILLER, THOMAS D., Detroit, Mich. (Illinois)
WESTON, J. A., Lansing, Mich. (Indiana)
ROPER, GEORGE D., Rockford, Ill. (Iowa Dist.)
SCHALL, H. D., Detroit, Mich. (Michigan)
KELSEY, L. D., Brookfield, Mo. (Missouri)
NORTON, ARTHUR E., Boston, Mass. (N. E. Gas Eng.)
BARTLETT, C. E. (New Jersey)
EGLESTON, G. P., San Francisco, Calif. (Pacific Coast)
BARTLETT, C. E., Philadelphia, Pa. (Pennsylvania)
SEIDENGLANZ, C. H., Dallas, Tex. (So. Central)
SPARKS, F. F., Chattanooga, Tenn. (Southern)
McCULLOUGH, CHARLES, Milwaukee, Wisc. (Wisconsin)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Exhibition—JOHN S. DEHART, JR., Newark, N. J.
Nominating—GEORGE D. ROPER, Rockford, Ill.
Division of Accessories Manufacturers—J. M. SHERWOOD, New York, N. Y.
Division of Apparatus and Works Manufacturers—D. J. COLLINS, Philadelphia, Pa.
Division of Gas Range Manufacturers—WM. M. CRANE, New York, N. Y.
Division of Heating Appliance Manufacturers—K. S. CLOW, Chicago, Ill.
Division of Industrial Appliance Manufacturers—WM. B. KOPPER, Brooklyn, N. Y.
Division of Lighting Appliance Manufacturers—TOWNSEND STITES, Gloucester, N. J.
Division of Meter Manufacturers—DONALD McDONALD, New York, N. Y.
Division of Office Labor Saving Devices Manufacturers—E. J. FERRIS, New York, N. Y.
Division of Water Heater Manufacturers—A. P. BRILL, Pittsburgh, Pa.
Division of Supply Manufacturers—J. J. GREENE, New York, N. Y.

A Broadcast

THE importance of our great industry, its scope and what it has to offer and especially, the importance of our annual exhibition at Atlantic City, October 23rd to 27th, will be brought strongly home to architects, plumbers, hotel managers, building contractors, hospital and institutional managers, hardware dealers and heating and ventilating engineers from the Mississippi to the coast prior to the opening of our Convention.

Some thirty thousand of these gentlemen will receive this story in their mail, in poster form, and headed with the attractive cut shown herewith.

This two-page "broadcast," 27″ by 22″ when fully opened, most attractively illustrated in two colors, will tell just what the gas industry means today and what it can offer to increase the ease, cleanliness and economy of life. In addition it will point out in a general way how each and every one of these gentlemen can benefit by going to Atlantic City and looking over our exhibition. Furthermore it will contain the name of every exhibitor on the Steel Pier, as well as what he will exhibit. Enclosed there will also be a post card, the return of which will insure the sender receiving a special invitation to Atlantic City and the Exhibition.

"Facts like the above," says the broadcast, "mean money for you.

"Go to Atlantic City on October 23 to 27 and see this four billion dollar industry on exhibition on the Steel Pier. Get acquainted with the live gas crowd that will be there, and look over the manufacturers' exhibits.

"Go there and see the very last word in appliances and methods that you can use to give your clients the very best gas service—a service that means satisfaction to them, a satisfaction that will mean new and better business to you.

"Act today. Sign and mail the attached card and receive a special invitation admitting you to the Exhibition."

Go to Atlantic City
for the biggest Gas Appliance Exhibition ever given

COMMERCIAL SECTION

A. P. POST, Chairman — WILLIAM GOULD, Vice-Chairman

LOUIS STOTZ, Secretary

MANAGING COMMITTEE—1922

At Large

BEAL, A. R., Poughkeepsie, N. Y.
CAULEY, F. F., Chicago, Ill.
CLARK, J. C. D., Boston, Mass.
CRANE, WM. M., New York, N. Y.
DAVIES, J. E., Chicago, Ill.
GOULD, WM., Boston, Mass.
KARSHNER, G. M., New York, N. Y.
LONG, H. J., New Brunswick, N. J.
MACSWEENEY, J. P., Rochester, N. Y.
POST, A. P., Philadelphia, Pa.
REINACH, H. B., New York, N. Y.
RUTLEDGE, F. J., Philadelphia, Pa.
SCHUTT, H. S., Philadelphia, Pa.
SHATTUCK, J. D., Chester, Pa.
SMITH, DORSEY R., Baltimore, Md.

Representing Affiliated Societies

BURKE, E. J., Indianapolis, Ind. (Indiana)
CAMPBELL, E. C., Benton Harbor, Mich. (Michigan)
COBL, WILEY F., Mexico, Mo. (Missouri)
CRAFTS, H. C., Pittsfield, Mass. (N. E. Gas Eng.)
CRANKSHAW, J. WARD, Allentown, Pa. (Pennsylvania)
DOERING, H. A., Mt. Vernon, N. Y. (Empire State)
FISHER, R. E., San Francisco, Cal. (Pacific Coast)
FLAUTT, J. J., New Orleans, La. (South Central)
FORNEY, JAS. A., Charlotte, N. C. (Southern)
HANLAN, J. P., Newark, N. J. (New Jersey)
JOHNSON, W. B., Toronto, Ont., Canada. (Canadian)
ST. JOHN, JOHN, Madison, Wisc. (Wisconsin)
TAYLOR, W. H., Omaha, Nebr. (Iowa District)
WALLACE, R. S., Peoria, Ill. (Illinois)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Contributions to Monthly—Representatives, Affiliated Societies
Cooperation with Architects and Plumbers—G. M. KARSHNER, New York, N. Y.
Industrial Sales—F. F. CAULEY, Chicago, Ill.
Sales Stimulation—WM. GOULD, Boston, Mass.
Educational Pamphlets (Sub.)—J. P. HANLAN, Newark, N. J.
Merchandise Advertising (Sub.)—J. E. DAVIES, Chicago, Ill.
Nominating—DORSEY R. SMITH, Baltimore, Md.
Program—WM. GOULD, Boston, Mass.

Twenty-five Per Cent of Our Sendout

THE Managing Committee of the Commercial Section desires to bring to the attention of member companies the subject of gas lighting which is considered of vital importance to the industry.

Despite its setback, this branch of the gas business still accounts for more than twenty-five per cent of all manufactured gas sold in the United States. It must be agreed that to lose more of this business would be to the detriment of sales of gas for other purposes, because our customers are impressed and judge by what they see,—the disappearance of gas lighting would lead them to believe that the use of gas for all purposes is on the decline. The unlimited value of good gas lighting as advertising for us can not be gainsaid, and there is probably nothing that can take its place for this purpose alone. Gas lighting as a form of publicity is unique in effectiveness, and the more valuable because it pays for itself in direct, as well as indirect revenue.

The change from candle power to B.t.u. basis compels attention to gas lighting equipment, and thus warrants in itself a permanent systematic maintenance service. Maintenance service of lighting appliances may be self-sustaining by charging customers for mantles, and other parts which require replacement.

Lighting campaigns that have for their purpose intensive effort to supply "the right light for the right place" can this

fall be a medium of restoring to use many outlets that during the past few years have, for various reasons, remained idle. A countrywide movement participated in by all companies would without question bring back to the public mind the dependability and real efficiency of gas lighting, and aside from the advertising value of our business, could be made to earn some direct profit. The need and desire for additional revenue is common to all gas companies, and every branch of their business would be benefitted by a national rejuvenation of lighting effort.

Commercial activity in our industry has been resumed, restoration of sales forces is well under way, increase of output is again generally sought, and it is believed that to this comprehensive program of sales work the clinching of such lighting business as we now have, and its definite extension, would be not only appropriate but very effective. The cooperation of your company in the general movement for rehabilitating gas lighting would add important momentus to the national effort, and this is to ask that you kindly advise to what extent you are able to participate this fall.

The Hammond branch of the Northern Indiana Gas and Electric Company is well aware of the great advertising value of its window displays.

Every Saturday evening, if possible, it tries to stage an appliance demonstration in its windows. The photograph shows Mr. George Levering of the Sales Department disguised as the Magic Chef, demonstrating Oven Canning. The demonstration attracted great crowds and created much interest.

Leasing Heat Idea Stimulates Inquiries

The Peoples Gas Light & Coke Company of Chicago introduces an unique idea to increase house heating business. (EDITOR'S NOTE.)

BECAUSE of the circumstances of 1922—coal mine strike, railroad strike, coal shortage, high fuel prices and the consequences thereof—nearly everybody that has to do his own heating is a ready-made prospect this Fall for the suggestion that "You Can Do It Better with Gas" in factory, shop, office, store or home. The approach of cold weather, while coal-railroad difficulties are still fresh in mind, immensely enlarges the opportunity to push the sale of gas-heating appliances.

But there is one class of prospects—not a small class in Chicago and probably large enough to merit attention in every city—that does not respond easily to the *selling* of gas-heating appliances. These are the short-term lease holders, most of whom occupy, for one purpose or another, premises that fall within one of four general classifications, as follows:

1—There are a large number of loft buildings in Chicago suitable for courageous though not highly capitalized manufacturing adventures.

2—In the newer sections of the city are many basementless stores that are rented on the "get your heat yourself" plan.

3—In these same sections there have sprung up, mushroom like, colonies of "real estate" bungalows, that are rented without any visible method of procuring heat.

4—Small flats and apartments rented without heat are common in older sections.

Renters of premises like those described above do not buy heating equipment easily. They do not take kindly to the idea of investing an appreciable amount of money in appliances to be used in a building or in space they have leased for only a year or two. Consequently this business, which in the aggregate represents a large volume of gas sales, has been, to a great extent, lost.

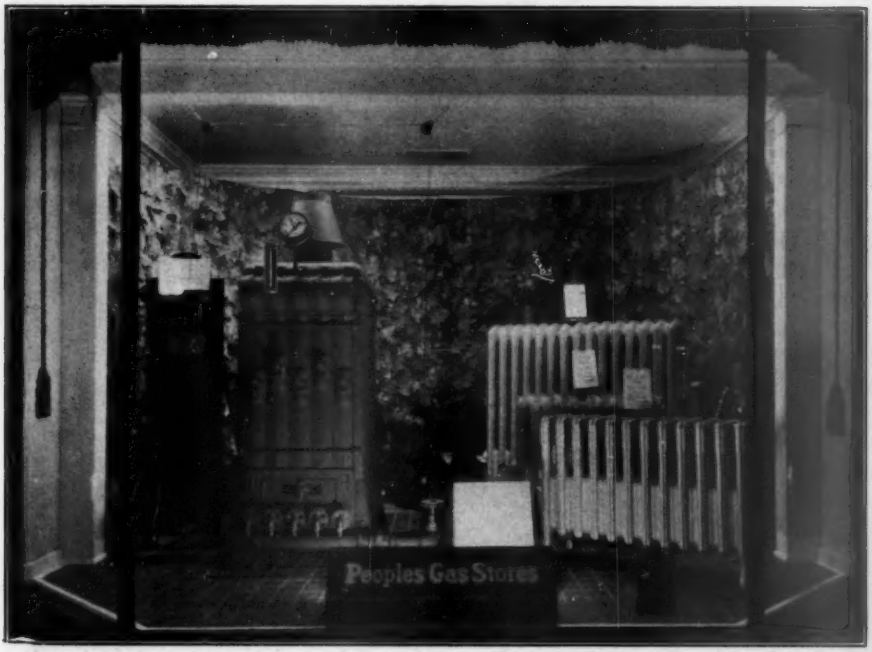
The idea of leasing space heating equipment is the result of an effort to secure this business and it is believed that such an innovation at this particular time will bring results.

As an experiment, it has been decided to offer the Gasteam Radiator under a comparatively simple plan, as follows:

The term of the lease is for one year from date of signature and the total yearly rental is payable in seven equal monthly installments, from October to April inclusive. The first installment, plus the charge of installation of the equipment leased, is to be paid when the contract is signed. The yearly rental is fixed, as far as possible, at one-quarter of the sale price of the appliance or appliances.

The leasing idea, of course, is to place Gasteam Radiators in places where it has been heretofore difficult to make installations. It is hoped that with this method of advertising, some of the leased equipment will be permanent. As an inducement for permanent purchase, the following is included in the agreement:

"The lessee shall have the right to purchase said heating appliances at the present sale price thereof at any



time before the termination of this lease as hereunder provided, and in the event of such purchase, the lessee will be credited on said purchase price with the full amount of rental paid to the lessor hereunder during the first year or portion thereof and, if this lease shall have been continued in force for a longer period than one year, the lessee will be credited on said purchase price with three-quarters (3/4) of the rental paid hereunder during the second year, one-half (1/2) of the rental paid hereunder during the third year, and one-quarter (1/4) of the rental paid hereunder during the fourth and subsequent years, provided the total amount of said credit shall in no event exceed the purchase price."

Preliminary newspaper advertising, announcing the leasing plan, has been prolific of inquiries and all indications point to a more widely distributed and profitable increased gas load through the use of this plan. Besides these direct benefits to the company, the plan offers an excellent medium of advertising the fact that, *"YOU CAN DO IT BETTER WITH GAS."*

Two Attractive "Heating" Windows.

Gas Fuel for Cocoa Bean Roasting

Indirect Fired—One Burner Unit for each Roaster

Capacity—425 lbs. per unit per charge

Average Gas Consumption 330 cu. ft.

Time—52 minutes per roast

Monthly Gas Consumption 60,000 cu. ft. per roaster per month

Detailed information on file at A. G. A. Headquarters

Gas for the Cafeteria Bake Shop

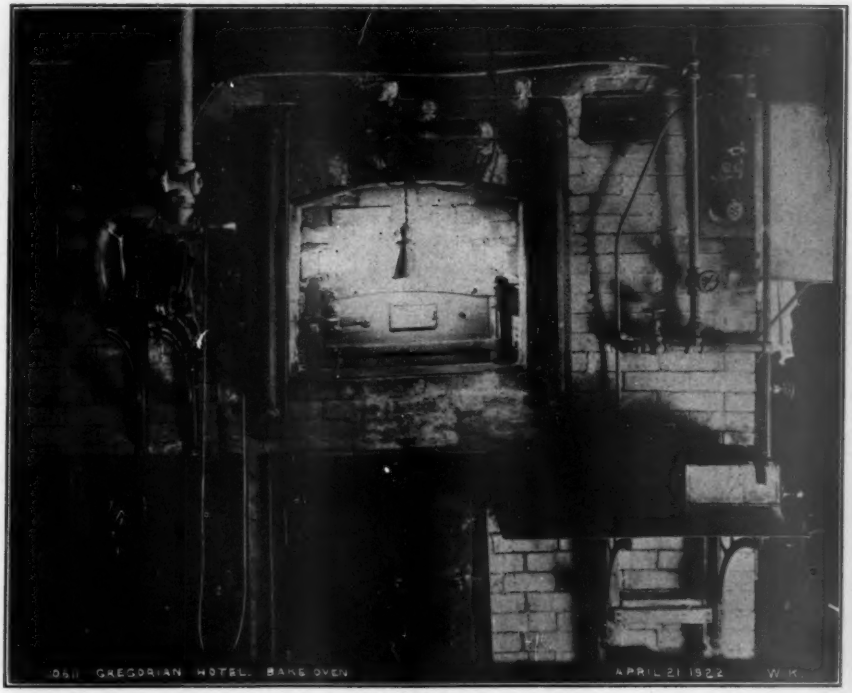
Oven Semi-Portable Type

Direct fired—One Burner Unit
Size of Oven—7′-0″ x 10′-0″

Daily Capacity—3,000 Rolls
100 Loaves Bread
200 Pieces Pastry

Maximum Gas Consumption— 500 cu. ft. per hour, or
100,000 cu. ft. per month, per oven.

Detailed information on file at A. G. A. Headquarters.



Gas Fuel for the Hotel Bake Shop

Smaller Direct Fired Type, using one Burner Unit.
Size of Oven—5′ wide, 6′ deep.

Daily Capacity—300 Rolls
50 Loaves Bread
100 Pieces Pastry

Maximum Gas Consumption— 300 cu. ft. per hour, or
50,000 cu. ft. per month, per oven

Detailed information on file at A. G. A. Headquarters.

Cyanogen in Illuminating Gas and Its Removal[1]

ALFRED R. POWELL[2]

This report has been prepared as a part of the work of the Purification Committee for 1922. The thanks of the writer are extended to W. A. Dunkley, Chairman of the Committee, and A. C. Fieldner, Supervising Fuels Chemist, Bureau of Mines. In gathering the data on cyanogen in various gas plants, valuable aid was rendered by C. H. Stone, E. A. Dieterle, and I. H. Jones.

Form in which cyanogen exists.—As applied to illuminating gas, cyanogen is a generic term and includes all of the cyanides or cyanogen compounds which may occur in the gas. The cyanogen exists almost wholly as hydrocyanic acid, together with much smaller quantities of free cyanogen and ammonium cyanide, according to some authorities. As used in gasworks practice, the term cyanogen is practically synonomous with hydrocyanic acid, and it is so used in this report.

Method of formation. — Cyanogen is one of the normal products resulting from the distillation of coal, but the amount formed during the primary carbonization reactions must be extremely

[1]Published by permission of the Director, U. S. Bureau of Mines.
[2]Associate chemist, Pittsburgh Experiment Station; member of Purification Committee, American Gas Association, 1922.

small. Most of the cyanogen found in coal and coke-oven gas probably results from a secondary reaction between ammonia and the red-hot coke. The most favorable temperature for this reaction to take place is said to be around 2200°F.

It is said that steaming has the effect of reducing the cyanogen content of gas, because in the presence of steam, cyanogen is converted into ammonia. It is probably due to this that the cyanogen content of water-gas is so low. In fact, it has been stated many times that water-gas contains no cyanogen; but it is extremely doubtful whether any commercial gas is entirely free from this impurity.

Quantity present in gas.—In order to obtain some reliable data on the quantity of cyanogen produced by various gas-making processes, and the subsequent variations in this cyanogen content as the gas passed through the condensing and purifying systems, several gas companies were requested to co-operate by making analyses of the gas. It was fully realized, of course, that the type of equipment, the method of operation, and the fuel used, would all affect the results; yet it was hoped that these results would be fairly typical of certain plants working under a given set of operating conditions. The following method was used for the determination of hydrocyanic acid in the gas.

The gas was passed at the rate of about 3 cu. ft. per hour through four bottle-washers, each containing about 100 cc. of 15 per cent pure NaOH solution. The volume of the gas sample used depended on the HCN content. At least 20 cu. ft. were passed where the amount was only 5 grains per 100 cu. ft. The bottles were washed out, the solution made up to 500 c.c., and a 50 c.c. sample taken for analysis. Precipitated lead carbonate was added and the solution filtered. The filtrate, now free of sulfur, was titrated with N/10 silver nitrate, using a few drops of 10 per cent potassium iodide as an aid to the end-point. Then,

$$\text{Grains HCN per 100 cu. ft.} = \frac{\text{c. c. N/10 } AgNO_3 \times 83.3}{\text{cu. ft. of gas (corrected)}}$$

Cyanogen in gas from typical vertical retort plant.—In studying the cyanogen in the gas from this plant it was necessary to remove the tar from the gas sample taken at the inlet to the primary condenser; but the tar so removed was examined for its cyanogen content, so that no loss of cyanogen took place in this determination. Two simultaneous samples were taken, one from the inlet to the primary condenser and the other from the inlet to the intensive scrubber.

The following results were obtained:

	Grains per 100 cu. ft.
Inlet to primary condenser	60.5
Inlet to intensive scrubber	60.2

These figures show that the primary condenser has no effect on the removal of cyanogen under the operating conditions prevailing. The temperature at the inlet to the primary condenser was 156°F., and at the inlet to the intensive scrubber, 76°F.

Another set of samples was taken at various other points in the gas scrubbing and purifying system, so as to determine the variations in the cyanogen content. The results obtained are summarized below.

	Grains per 100 cu. ft.
Inlet to intensive scrubber	44.0
Inlet to purifiers	19.0
Inlet to meter (between purifiers and light oil-scrubber)	14.7
Outlet of light oil-scrubber	7.3

It will be seen that the diminution of the cyanogen content as the gas passes through the system is very marked. In this plant only a small portion of the cyanogen is removed by the purifying boxes, which are of the ordinary iron oxide type.

Cyanogen in gas from typical water-gas plant.—Determinations of the cyanogen content of water-gas were made at the following points in the system: inlet to scrubber, inlet to P. and A. extractor, outlet of P. and A. extractor, and inlet to meter. The analyses showed that cyanogen at all of these points was present in the gas in quantities varying from mere traces to 1.2 grains. This bears out the generally accepted statement that water-gas contains extremely small quantities of cyanogen.

Cyanogen in gas from typical coke-oven plant using iron oxide purification.—At this plant, analyses for cyanogen were made at three points in the system. This was done at three different times so as to study the effect of changing operating conditions, different coals, etc. The following results were obtained:

	Grains per 100 cu. ft.		
	Test No. 1	Test No. 2	Test No. 3
Outlet of exhauster	25.60	62.35	
Inlet to purifiers	12.32	9.02	33.07
Outlet of purifiers	4.60	2.40	7.86

It will be observed that as the gas passes through the system in this plant a large portion of the cyanogen is removed en route by the exhauster, the extractors, saturators, and scrubbers before the purifying boxes are reached. The larger part of the remaining cyanogen is taken out in the boxes, although several grains still remain in the gas.

Cyanogen in gas from typical coke-oven plant using sodium carbonate liquid purification.—This plant was very similar to the one just described, save that the purification of the gas is carried out by the "Seaboard" liquid purification process. The results obtained by this plant are interesting as indicative of the efficiency of this process for the removal of cyanogen from gas, aside from its primary function of removing the hydrogen sulfide. The following results were obtained:

	Grains per 100 cu. ft.
Outlet of exhauster	46-47
Inlet to wet purification plant	2.5
Outlet of wet purification plant	0.0

This new purification process therefore seems to remove the cyanogen from gas completely, or at least down to a very slight trace.

Harmful effects from cyanogen in gas.—Cyanogen in gas is objectionable for two reasons, first on account of its action on the iron oxide in the dry purifiers, and secondly, owing to its probable tendency to promote corrosion of the holders and mains.

Bueb and Guillet[1] have claimed that the efficiency of the dry purifiers could be increased 50 per cent if the cyanogen were removed from the gas previous to purification. This figure is probably much too high for average practice, but there is no doubt that the efficiency of purification could be increased by the removal of cyanogen. The conversion of a portion of the iron oxide to ferrocyanides not only renders that much of the oxide ineffective for the removal of hydrogen sulfide, but as the conversion occurs on the surfaces of the oxide particles the interior of the particles are also prevented from exerting any effective purifying action.

The part that cyanogen plays in the

[1] Meade, "Modern Gasworks Practice," 1916.

corrosion of holders and in the corrosion and ultimate stoppage of gas mains is still somewhat undetermined, but the consensus of opinion is that it constitutes an important factor in this problem. Very recently, British gas companies have studied this question in some detail. Taplay and Parkinson[1] have reached the conclusion that hydrocyanic acid is the primary agent of corrosion, and that the oxygen in the gas acts in a secondary capacity to form iron oxide. These investigators state that high-pressure distribution increases the tendency to corrode, on account of the deposition of water in the mains. These conclusions are corroborated by another investigator,[2] who has examined the rust deposits in some detail. Sections of mains which had been sprayed with oil were found to be free from corrosion, as might be expected.

The purpose of the present report is not to enlarge on the problem of corrosion and stoppages in gas mains, but simply to gather together the present knowledge concerning cyanogen in the gas, and methods that are used or might be used for the removal of the cyanogen. Most of the processes in use, or those which have been proposed, involve the subsequent recovery of the cyanogen in one form or another as a by-product. It is very doubtful whether the recovery of cyanogen is economically feasible in the case of small American gas works. Larger gas plants, particularly coal-gas plants and coke oven plants might find this recovery profitable. In the following description of processes the methods for by-product recovery have been described briefly, as well as the removal from the gas.

Removal of Cyanogen from Gas

Simultaneous removal with sulfur by the purifying material.—In plants where no special process is used to remove the cyanogen, and where the ordinary iron oxide method is used for purification, the bulk of the cyanogen is removed from the gas by the purifying material. This has already been shown by actual analyses from various plants. Complete removal of the cyanogen is seldom attained by this procedure, however, and the deleterious effect of the cyanogen on the iron oxide has been already mentioned.

The exact reaction which occurs when the hydrocyanic acid is taken up by the purifying material is problematical, however, it is probable that one or both of the two following reactions take place:

$$Fe_2O_3 + 4HCN = 2Fe(CN)_2 + 2H_2O + O$$

$$FeS + 2HCN = Fe(CN)_2 + H_2S$$

The ferrous cyanide is then oxidized by the oxygen of the gas, so:

$$18\ Fe(CN)_2 + 3O_2 = 2Fe_2O_3 + 2Fe_4.\ 3Fe(CN)_6$$

These reactions, then, result in the formation of ferric ferrocyanide or prussian blue, which is insoluble and remains in the purifying material. It is said that the presence of moisture or steam in the boxes aids in the formation of this substance, while ammonia in the gas tends to prevent it.

This tendency of ammonia to prevent the formation of prussian blue is very desirable, since under these conditions thiocyanates are formed instead; and these, being soluble, drain out of the oxide to a large extent. Making the oxide alkaline with lime does not have the same effect as ammonia in the gas, since the lime is soon converted to the carbonate, and calcium carbonate does not have the

[1] Taplay, J. G. and Parkinson, B. R., Gas World, vol. 70, 1919, pp. 451-4; Gas Jour., vol. 146, 1919, pp. 622-4.
[2] Scott, J. J., Gas Jour., vol. 156, 1921, pp. 750-1; Gas World, vol. 75, 1921, pp. 545-7.

same efficiency as ammonia in preventing the formation of prussian blue.

In some plants it has been found desirable to extract the cyanogen from the fouled oxide, thus securing an additional by-product. The processes for accomplishing this may be divided into two classes, namely, those in which the recovered material is in the form of ferrocyanides and thiocyanates, and those in which recovery as ammonia is sought.

In the first type of process the spent oxide is treated with lime, which forms calcium thiocyanate. On further treatment with lime or other alkali and application of heat, the insoluble ferrocyanides go into solution, which are then recovered by filtration and precipitation.

In the second type, the sulfur is generally extracted from the spent oxide with a solvent, and this treatment is followed by the addition of lime to the residue. This mixture is then carried to a red heat, by means of which it is said that as much as 95 per cent of the cyanogen compounds in the spent oxide may be recovered as ammonia.

The Burkheiser purification process[1] is designed to purify the gas not only from hydrogen sulfide but also from hydrocyanic acid. The purifying medium consists essentially of iron oxide in water suspension. Ammonia keeps this medium in a slightly alkaline condition, so that the tendency is, as has been mentioned under iron oxide purification, for thiocyanate compounds to go into solution. These are later converted into calcium cyanide, and thence into ammonia.

A new purification process known as the "Seaboard" liquid purification process has made its appearance in the United States, and has already been adopted by several gas companies. In addition to showing very satisfactory results for the removal of hydrogen sulfide from the gas, it is claimed that complete removal of the hydrocyanic acid is secured simultaneously with the sulfur.[2] The analytical results which support this claim have already been given. Briefly, the process consists in purification of the gas by a solution of sodium carbonate, which is subsequently revivified or "actified" by aeration. The hydrocyanic acid is taken up by the sodium carbonate as sodium cyanide, and this, in the presence of the sulfur which is being absorbed, changes to sodium thiocyanate.[3] This sodium thiocyanate may be recovered as a by-product, but the most important phase of the process from the standpoint of cyanogen in gas is the complete removal of this impurity at the same time that the hydrogen sulfide is taken out. From the published results, it would appear probable that coal-gas or coke-oven gas plants making use of this process would require no special process or equipment for the removal of cyanogen.

Processes making use of ferrous salts and alkali. Under this general heading come a large number of processes which have been used or suggested for the removal and recovery of cyanogen from gas, but as in most of these the recovery feature has been emphasized to a large extent, so the description of these processes will be brief.

The ordinary cyanogen scrubber consists of a rotary washer very similar in design to the napthalene scrubber. The

[1]Burkheiser, K., Orig. Com. 8th Intern. Congr. Appl. Chem., vol. 10, 1912, pp. 63-77.
[2]Speer, Jr., F. W., Proc. Am. Gas Assoc. Technical Section, vol. 3, 1921, pp. 282-385.
[3]NaCNS. The American Chemical Society (See Journal of Am. Chem. Soc., Proceedings, 1922, p. 77) has adopted the prefix *thio* in place of *sulpho* when the sulfur replaces oxygen in a compound.

solution used in this washer is an alkaline solution of ferrous sulfate, and when fouled, this solution may either be discarded or the products recovered as plant requirements or the market may dictate.

In the Foulis process, sodium carbonate is added to a solution of ferrous chloride to give a precipitate of ferrous carbonate. This precipitated material is mixed with more sodium carbonate and placed in the gas-washer. The hydrocyanic acid in the gas acting on this mixture forms sodium ferrocyanide.

In Wilton's process, ferrous sulfate is the solution used in the washer, the ammonia in the gas furnishing the necessary alkalinity. Ammonium ferrocyanide is formed, and this may be converted later to prussian blue.

The Davis-Neill prussiate process is very similar to the Foulis process described above. Modifications are introduced to convert any insoluble ferrocyanides which may be present into soluble salts.

Bueb's process makes use of a solution of ferrous sulfate in ammonia liquor in the washer. Ferrous sulfide is formed by the action of hydrogen sulfide, and this in turn forms ferrocyanides with the hydrocyanic acid. These ferrocyanides—some of the insoluble—are later converted into sodium ferrocyanide. This process has been used somewhat in Europe.

The Espenhahn process[1] is a comparatively recent development and is designed primarily for the recovery of the cyanogen as a by-product. Soda ash, containing suspended ferrous sulfide or sodium ferrous ferrocyanide, is used for the removal of the hydrocyanic acid. Sodium ferrocyanide is formed in the solution, and this is removed by filtration. On cooling, the sodium ferrocyanides—some of them insoluble—are later converted into sodium ferrocyanide. This process has been used somewhat in Europe.

The polysulfide process.—This process has been developed by the British Cyanide Company, and has found some use in Great Britain. The gas is passed through a bed of spent oxide which is kept moist by a water-spray. The ammonia and hydrogen sulfide in the gas, together with the free sulfur in the spent oxide, form ammonium polysulfide. This absorbs the hydrocyanic acid with the formation of ammonium thiocyanate which passes out as a solution at the bottom of the bed. The spent oxide in the bed must be renewed every few months. It is claimed that a bed 25 ft. square by 6 ft. deep will handle 2,000,000 cu. ft. of gas per day.

Another process utilizing the same principle as that just described is the sodium polysulfide process.[2] Spent oxide is treated with sodium sulfide, and the sodium polysulfide thus formed removes the hydrocyanic acid from the gas as sodium thiocyanate. It is also claimed that carbon bisulfide is removed by this treatment.

The Taplay chalk process.—One of the most recent methods for the removal of cyanogen from gas had its origin in England.[3] This process is still in the experimental stage, but gives promise of producing good results with low operating cost. The material used for removing

[1]Espenhahn, E. V., Chem. Met. Eng., vol. 26, 1922, pp. 938-41.
[2]Minot, M., Am. Gas Jour., vol. 115, 1921, pp. 386-8.
[3]Taplay, J. G., Gas Jour., vol. 155, 1921, pp. 589-90; Gas World, vol. 75, 1921, p. 234; Gas Journal, vol. 158, 1922, p. 835

the cyanogen is chalk, kept moist by means of a water-spray. The preliminary experiments seem to show that the chalk acts as a catalyst, the hydrocyanic acid, ammonia, and hydrogen sulfide in the gas uniting to form ammonium thiocyanate. It might be well to quote the following description of this process as given by the British Institute of Gas Engineers:[4]

"Briefly outlined, the process is as follows: There are two ways of working—by solid chalk in a scrubber, or by cream of chalk and water in a washer. This will make it possible in many cases to utilize an existing plant, or a spare plant, of either description. The position of the unit should lie between the tar extractor and the ammonia washer, for it is essential to the reactions that the gas should contain ammonia, but that it should be free from tar. If a scrubber be used, the solid chalk should be broken into lumps varying in size according to the plant, and this chalk is periodically washed with clean water or weak liquor. The product, which is ammonium thiocyanate, must be removed as formed. Alternatively, by using a washer, the gas is passed through an aqueous solution of bicarbonate of lime. In either case the chalk appears to act as a catalyst; the reaction becomes cyclic, and hence may be carried out as a continuous operation."

It will be interesting to hear further concerning this process as data on large scale operation may appear.

Summary and Conclusions

It appears very probable from recent investigations in England as well as from observations which have been made in the United States, that cyanogen, or, to be more specific, hydrocyanic acid, in gas, is one of the most important factors in the corrosion of gas holders and gas mains, and the consequent iron oxide stoppages in mains. For this reason it may be necessary for some gas plants, particularly coal-gas and coke-oven gas plants, to adopt some means, or to improve the apparatus already in existence, for the removal of cyanogen.

The recovery of the cyanogen as a by-product is economically feasible only in the larger plants, except in certain process where the by-product separates out without any further treatment after its removal has been accomplished.

Where purification of coal-gas and coke-oven gas by iron oxide is employed, it is not good practice to depend on the purifying boxes for the removal of the cyanogen.

Many processes have been used or proposed for the removal and recovery of cyanogen from gas. One process, still in the experimental stage, utilizes chalk as the purifying medium, but the results from large-scale practice are as yet not available.

The "Seaboard" liquid purification process, designed primarily for removal of hydrogen sulfide is interesting in this connection, and results from large-scale operation tend to show that complete removal of the cyanogen is secured simultaneously with the removal of sulfur.

It is impossible at the present time to make definite recommendations concerning the removal of cyanogen, since the maximum amount which may be present in gas without causing corrosion is not known. It is important that a thorough study of this be made, not only from the standpoint of the quantity of cyanogen in gas necessary to cause corrosion, but also as to any auxiliary factors which may assist in the corrosion.

[4]Gas Jour., vol. 158, 1922, p 835.

Report of Consumers' Meters Committee, 1922

JOSEPH LUCENA, Chairman, Syracuse, N. Y.

THE task assigned the Consumers' Meters Committee for 1922 was to accomplish something through the co-operation of the Association and the Meter Manufacturers, towards establishing a rating that will be more comprehensive than the use of meter lights.

The Committee has decided that the first step in such a procedure is to establish a uniform method for the determination of meter capacities. This has been done and is covered by the article entitled, "Appendix A, Determination of Meter Capacities" attached to this report. Mr. H. S. Bean of the U. S. Bureau of Standards has compiled this method from the data furnished by Mr. G. A. Lane of Chicago, (see Appendix B of this report) and the methods outlined in Mr. Spangenberg's paper read before the 1904 Convention of the American Gas Light Association, given herewith as Appendix C.

Having disposed of the subject of the Determination of Meter Capacities, the Committee has decided that from a practical standpoint, it would be extremely unwise to drop the old numerals indicating the size of the case and meter screws, but that the terms "light," "A," "B" and "C" appended thereto, could and should be dispensed with, substituting in their places, the maximum rated capacity, in cubic feet per hour, of each size and type of meter separated from the size numeral with a hyphen, with the words "cubic feet per hour" omitted in the following manner: 5-100; 5-150; 5-175; 30-330; 30-600 and 30-875, etc. It was further determined that this information should appear on a rectangular badge placed on the upper left hand front of the meter just above the gallery seam allowing space above it for the gas company's badge. Should the meter be a pre-payment meter, this badge would be placed in the upper right hand corner of the meter in the same manner as described. There is no objection to the maker including on this badge his name and maker's number. In fact this procedure would be of benefit to those operating gas companies. The badging of meters now in use according to the plan outlined is a matter for the individual companies to decide.

The advisability of standardizing meters was considered, and upon the assurance of the manufacturers of tin meters that meters are practically now standard with uniform interchangeable working parts, it is the sense of the Committee that it is impractical and unwise to attempt to standardize meters as to their construction or type.

Owing to the wide variation between cast iron meters as made at present, no recommendation is made at this time but those members of the Committee who are especially fitted to go into this phase of the subject have been asked to take it under consideration with a view of reconciling such variations as may be practical.

Appendix A

Determination of Meter Capacities

H. S. BEAN of the U. S. Bureau of Standards

Definitions

1. *Air Capacity of Meter.* The air capacity of a meter is the volume of air which a correctly adjusted meter will indicate has passed through it in one hour, when the pressure drop between inlet and outlet of the meter has been maintained uniform and equal to ½ inch of water column.
2. *Gas Capacity of Meter.* The gas capacity of a meter is the volume of a *gas other than air* which a correctly adjusted meter will indicate has passed through it in one hour, when the pressure drop between inlet and outlet of the meter has been maintained uniform and equal to ½ inch of water column.
3. *Relation between Air and Gas Capacity.* For all practical purposes the *gas capacity* of a meter may be expressed in terms of the *air capacity* by the following equation: i.e.

$$\text{(Gas Capacity)} = \text{(Air Capacity)} \times \frac{1}{\sqrt{\text{(Sp. Gr. of Gas)}}}$$

4. *"Rated" (or Badged) Gas Capacity of Meters.* For the purpose of marking the capacity of a meter upon a badge on the front gallery plate of the meter, the capacity thus indicated shall be 1.25 times the *Air Capacity* of the meter.

Method of Determining Meter Capacities

Conditions

1. The medium used when making tests of meters shall be *Air,* (unless it is unnecessarily difficult or impracticable to use air).
2. The pressure of the air (or gas) supply at the meter inlet shall not exceed a pressure of 10 inches of water column above atmospheric, and it is recommended that whenever possible, it be maintained between 1 and 2 inches.

Note: Due to the decrease in the atmospheric pressure at localities of relatively high elevation (2000 feet and over) the density of the air at these localities is less than at those localities of low elevation. Therefore, meter capacity tests made at the higher elevations will not agree with those made on the same meter at lower elevations unless the difference in the average atmospheric pressures, as obtained from barometer readings, is taken into consideration. This may be done by means of the following equation:

$$\text{Capacity (high el)} = \text{Capacity (low el)} \times \sqrt{\frac{\text{avg. Barometer (low el)}}{\text{avg. Barometer (high el)}}}$$

When meters are used in localities of the same general elevation as that at which the capacity tests were made, the effect of any difference in the atmospheric pressures may be neglected.

3. The temperature of the air (or gas) shall be maintained as near 60°F. as is reasonably possible under ordinary working conditions.
4. The pipes, hose, valves and other fittings between the meter and prover shall be of such size that they will carry without causing more than an appreciable pressure drop the full capacity of the meter under a ½" drop between inlet and outlet.
5. The valves for controlling the flow of air (or gas) into and out of the

meter shall be placed at such distances from the meter as not to interfere with the obtaining of reliable pressure readings.

6. A differential water manometer, or gage, shall be connected across the inlet and outlet of the meter to indicate the pressure drop through the meter. The pressure gage connection taps in the inlet and outlet pipes shall be as close to the meter connections as possible. (In place of the differential manometer, separate water manometers, or gages, may be connected to the inlet and outlet pressure connections, and the difference in the two readings determined. This, however, involves more work and is more open to errors.)

Procedure

(a) Where a calibrated meter prover is used as the air supply.

1. With the meter and differential pressure gage properly connected, open the inlet and outlet valves and, while the meter is in motion, adjust the outlet valve until the pressure loss between inlet and outlet is ½ inch of water. The fluctuations of the liquid in the differential gage should be averaged in the determination of the pressure loss.
2. After obtaining the desired average pressure loss allow the meter to remain in operation for a few seconds, then close the inlet valve, leaving the outlet valve in the position just determined. Refill the prover as much above the zero mark as possible.
3. Open the inlet valve gradually so as not to throw a sudden load upon the meter, but so as to bring it up to speed as quickly as possible. (This should not require more than 0.1 or 0.2 of a cubic foot, and will give the meter a flying start.)
4. As the pointer of the prover passes the zero mark of the scale start a stop-watch.
5. As the second hand of the stop-watch passes the one-minute point note the reading of the prover. (When only a 5 cubic foot prover is available for making meter capacity tests, one-minute readings may be obtained with meters having hourly capacities of up to 300 cubic feet, and half-minute readings with meters having hourly capacities of up to 500 cubic feet. No meter having a capacity under a five-tenths loss, of over 500 cubic feet per hour should be capacity tested by means of a 5 cubic foot prover. When testing meters having hourly capacities of 300 cubic feet or less with a 10 cubic foot or larger prover, two-minute readings may be obtained if desired.)
6. Multiply the reading of the prover for the first minute by 60, the product being the *Air Capacity* of the meter. (The same results should be obtained by multiplying the reading for the half-minute by 120, or the reading for the two minutes by 30.)
7. Multiply the Air Capacity thus determined by 1.25 to obtain the *"Rated" Gas Capacity* of the meter.

(b) When the air (or gas) supply is not obtained from a calibrated prover.

1. With the meter and differential pressure gage properly connected,

open the inlet and outlet valves and, while the meter is in motion, adjust the outlet valve until the pressure loss between inlet and outlet is ½ inch of water. The fluctuations of the liquid in the differential gage should be averaged in the determination of the pressure loss.

2. With the meter still going, start a stop-watch as the meter test hand passes a "Zero" or starting point. (Some operators prefer to use the tangent instead of the test hand for making this test. To use the tangent, however, it is necessary that the top of the meter be removed. When testing meters of the open top type this would not be feasible).
3. As the test hand again passes the "Zero" point after making one revolution, stop the stop-watch, and then close the inlet valve to the meter. (If desired, the test hand may be allowed to make two or more revolutions). Record the volume passed by the meter, and the time interval as shown by the stop-watch.
4. From the time required for the meter to pass the recorded volume, caluculate the volume that would pass in one hour. This will be the *Air Capacity* of the meter.
5. Multiply the Air Capacity by 1.25 to obtain the *"Rated" Gas Capacity* of the meter.

(c) Where gas (other than air) is used as the testing medium.

1. The procedure is the same here as in cases (a) or (b), except in the calculations, (a) 6 and 7, or (b) 4 and 5.
2. From the time required to pass the measured volume of gas, calculate the volume of gas that would pass in one hour. This will be the Gas Capacity of the meter for the *particular* gas used in the test.
3. Determine the specific gravity of the gas used. (This may be done from a chemical analysis, with an Edwards density balance, or with an effusion apparatus). If the specific gravity is approximately 0.64 then the gas capacity as calculated above may be taken as the rated capacity of the meter.
4. If the specific gravity of the gas differs from 0.64 by more than 3 or 4 per cent, then the Rated Gas Capacity should be calculated by the equation:

$$\text{(Rated Gas Capacity)} = \text{(Gas Capacity)} \times \sqrt{\frac{\text{Sp. Gr.}}{0.64}}$$

Reporting

1. For the purpose of reporting meter capacities and badging meters with their Rated Gas Capacity, the Rated Gas Capacity of a meter shall be reported to the nearest even 10 cubic feet lower than the calculated capacity. (For example, if the rated gas capacity of a meter is figured to be 273 cubic feet per hour, it shall be reported and marked as having a Rated Gas Capacity of 270 cu. feet).

Appendix B

Report of Mr. G. A. Lane, The Peoples Gas Light and Coke Company, Chicago, Ill., to the Committee, covering "Determination of Meter Capacities."

Capacity Test Made at South Meter Shop May-June, 1921

The test was made in the old exhauster house at the holder of the South Division.

This is a one story brick building well lighted and free from drafts. The temperature of the room where the test was carried out showed no sudden or decided variations.

An 8" main runs directly from the holder through the cellar of the building and a 4" tie in was made to this main for the supply to make the test. The 4" line went through an Equitable Governor which reduced the pressure from 14" of water, that of the holder, to 10" of water. The 4" was carried up through the floor across and down to a 4" gate valve at a convenient distance above the inlet of the largest meter to be tested so that it was in a position where it could be easily operated. From the valve to the inlet of the meter the 4" was reduced to the size of the meter connections.

Fittings were employed that would require a minimum amount of work to change for each meter from the smallest tested 3-light size up to the largest a 60-C having 4" connections. The outlet valve was located at the same height as the inlet valve so that both could be manipulated easily and conveniently. From the outlet valve there was a 4" straight run through the roof. The top of the pipe where it exhausted into the air was protected by a hood arranged so that back drafts were eliminated.

The whole outlet line from the meter to the air was a straight run.

A 6" inclined differential gauge was used to determine the loss of pressure through the meter. Outlets for this gauge were taken off as near to the meter screws as possible and the controlling valves of the inlet and outlet lines were far enough away so as to have no influence upon the gauge.

U gauges used as a check were installed on the lines from the inlet and outlet leading to the differential gauges.

An outlet was provided to take off samples of the gas being used to determine the specific gravity.

The gauges and thermometers for determining temperatures of gas and air were all located so that they could be easily read.

The arrangement and fitting work are clearly shown in the accompanying photographs. Practically all the meters tested were meters that had been given new diaphragm repairs in the Meter Shop taken from our O. K. stock. No attempt was made to especially prepare meters for this test so as to obtain a phenomenal capacity as that was not our object. We wished to determine the capacity of the meters as they actually go into service after undergoing the ordinary course of repair.

In making the test the tops were removed from the meters. The valves were manipulated until an initial pressure of 7" of water was established and ½" loss shown on the differential gauge. The number of revolutions of the tangent required to make one revolution of the proving head was timed with a stop-watch and the amount of gas passed per hour was calculated. A chemist furnished by the Laboratory took samples of the gas for each meter tested and worked out the specific gravity.

For our own information a capacity was also taken at 1" loss of pressure through the meter. Every meter was given successive tests until two runs agreed. As very little difficulty was encountered in maintaining the required

pressures but few of the meters had to be given more than two runs.

After the test with gas was completed a test was made with air as a check. A large compression tank was installed and kept filled at 2½ lbs. pressure supplied by a Connersville Blower.

A 4" line lead from the tank to the inlet of the meter controlled by a 4" valve. A valve of the proper size for the size meter being tested was installed on outlet exhausting into the atmosphere.

The arrangement of gauges and thermometers and their connections was practically the same as used with the test with gas and the same method of arriving at the capacities was employed.

Before making the test the meter was thoroughly purged until all traces of gas were removed.

From the data obtained from both tests a corresponding standard meter capacity was worked out of gas of 5 specific gravity under standard conditions of 60 deg. F. and 30 deg. of mercury pressure.

Tables giving results obtained are attached.

AMERICAN GAS ASSOCIATION
130 East Fifteenth St.
New York City.

Aug. 9th, 1921.

Mr. Geo. A. Lane, Supt. of Meters,
The Peoples Gas Light & Coke Co.,
Chicago, Ill.

Dear Mr. Lane:

I am enclosing a number of tables of data, etc., which you may wish to use in your contribution to the work of the A. G. A. Committee on Consumers' Meters.

The small chart made on tracing cloth shows the importance of taking into consideration the specific gravity or more properly the density of the gas whenever any attempt is made to establish the capacity of any meter to pass gas expressed in cubic feet per hour under any given set of conditions as to pressure drop over the inlet and outlet of the meter, etc. For example, you will note from this chart

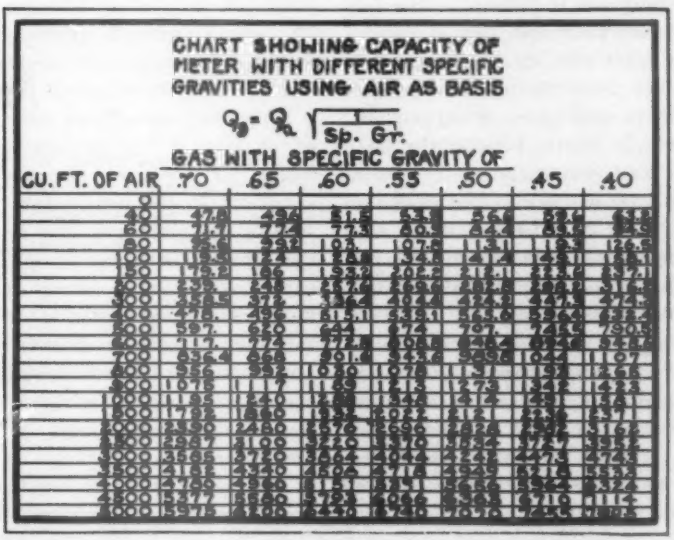


CHART SHOWING CAPACITY OF METER WITH DIFFERENT SPECIFIC GRAVITIES USING AIR AS BASIS

$Q_g = Q_a \sqrt{\frac{1}{Sp.\ Gr.}}$

CU. FT. OF AIR	GAS WITH SPECIFIC GRAVITY OF .70	.65	.60	.55	.50	.45	.40
0							
40	47.8	49.6	51.6	53.9	56.6	59.6	63.2
80	95.7	99.2	103.2	107.8	113.1	119.3	126.5
100	119.6	124	129	134.8	141.4	149.1	158.1
150	179.3	186	193.7	202.2	212.1	223.7	237.1
200	239.1	248	258.3	269.7	282.8	298.2	316.1
300	358.6	372	387.4	404.5	424.2	447.3	474.2
400	478.1	496	516.6	539.3	565.6	596.4	632.2
500	597.7	620	645.7	674.2	707.1	745.5	790.3
600	717.2	744	774.9	809.1	848.5	894.6	948.4
700	836.7	868	904.1	943.9	989.9	1043.7	1106.4
800	956	992	1033	1078	1131	1193	1264
900	1076	1117	1163	1214	1273	1342	1422
1000	1195	1240	1291	1348	1414	1491	1580
1200	1434	1488	1549	1617	1696	1789	1896
1400	1673	1736	1807	1887	1979	2087	2212
1600	1912	1984	2066	2157	2262	2385	2528
1800	2151	2232	2324	2427	2545	2684	2844
2000	2390	2480	2582	2696	2828	2982	3160
2200	2629	2728	2840	2966	3111	3280	3476
2400	2868	2976	3098	3236	3394	3578	3792
2600	3107	3224	3356	3506	3676	3876	4108
2800	3346	3472	3615	3775	3959	4174	4424
3000	3585	3720	3873	4045	4242	4472	4740

that if a given meter shows a capacity of 1195 cu. ft. per hour when tested with carbureted water-gas of .7 specific gravity, under the same conditions, it would have shown a capacity of 1581 cu. ft. per hour with coke oven gas of .4 specific gravity, or in other words an increased capacity of over 30 per cent, and if air had been used the observed capacity would have been 1000 cu. ft. per hour.

The data given on the above named chart was calculated by the following formula:

$$Qg = Qa \frac{1}{S}$$

where

Qg=Meter capacity in cu. ft. per hour with gas under a given set of conditions

Qa=Meter capacity in cu. ft. per hour with air under the same set of conditions.

S =Specific gravity of the gas with air under the same set of conditions.

That the above formula is correct for all practical purposes is proven by the fact that the calculated capacities of various kinds and sizes with air as calculated by the formula from the actual capacities of the meters with gases of various specific gravities, observed under the same condition, fall practically on a straight line or in other words check as shown on the large chart of "curve showing relation between actual and calculated capacities in cu. ft. per hr. of various kinds and sizes of meters, etc."

In setting a standard rating for the capacity of any meter it seems to me that your committee will have to select some arbitrary standard set of conditions. For example, if your committee should decide to determine the capacity of any meter with an initial or meter inlet pressure of say 2 inches of water and a differential or pressure drop over the inlet and outlet of the meter of ½ inch of water, it would still be necessary to specify the specific gravity of the gas used to determine the rating and the temperature and pressure conditions under which the determination of capacity is to be made or to which the results are to be corrected. I would suggest that the specific gravity of .5 or .6 be used, (perhaps the former would be advisable in view of the trend of gas manufacture toward the production of coal or coke oven gases) as these gravities are close to the average found for coal and carbureted water-gas mixtures as well as the usual natural gases, and hence would give a standard of the most universal application throughout the country.

In the set of tables which give you the observed and corrected results you will note that I have had the standard meter capacities calculated from the observed capacities to standard set of conditions on the basis of a ½ inch and a 1 inch of water pressure differential over the meter and with gas of a .5 specific gravity under a total pressure of 30 inches of water and at a temperature of 60 deg. F.

I have had corrections made to a basis of 60 deg. F. in temperature and 30 inches of mercury pressure, because variations in the temperature and pressure of any given gas used to determine the capacity of a meter will of course cause changes in the density or weight of the gas in a cubic foot of space and hence cause an increase or decrease in the observed rate of flow of the gas as it becomes expanded or contracted due to observed temperature and pressure increases or decreases.

In order to take into consideration the important factors which may cause vari-

ations in a determination of a standard capacity rating for a meter, we have evolved a formula which may be used with the data obtained in any test of a meter made with a gas of any prevailing specific gravity at any place in the country, under a given set of pressure drop conditions with any reasonable meter inlet pressure, temperature and atmospheric or barometric pressure conditions prevailing, to obtain results substantially the same as if it had been possible to make the determination under the arbitrary condition of a .5 specific gravity gas at the usual standard used by gas men of 60 deg. F. as to temperature and 30 inches of mercury as to total pressure of the gas flowing through the meter. This formula is as follows:

$$Q^2 = \frac{1.414 \quad Q^1}{\frac{1}{SC}}$$ where

Q^2=Standard meter capacity in cubic feet per hour of a gas of .5 specific gravity flowing through the meter at 60 deg. F. and under a total pressure of 30 inches of mercury.

Q^1=Observed meter capacity in cubic feet per hour with any gas or air G flowing through the meter at any temperature T and total pressure P.

S=Specific Gravity of gas or air G (referred to air as 1 at 60 deg. F. and 30 inches of mercury).

T=Observed temperature of Gas G flowing through meter.

P=Observed total pressure of gas G flowing through meter.

C=Correction factor for correcting volume of a gas at any temperature T and total pressure P to a standard volume at 60 deg. F. and 30 inches of mercury pressure.

If your committee desires to specify a gas of say .6 or any other specific gravity as a basis of rating, a suitable formula similar to that given above may be devised.

Should there be any points about the foregoing explanation or data submitted which are not perfectly clear please do not hesitate to call upon me for further explanation as I appreciate that it is somewhat different from the usual manner in which heretofore we have approached the formulation of a method for rating meters on a standard capacity basis.

Yours very truly,
(Signed) R. B. HARPER.

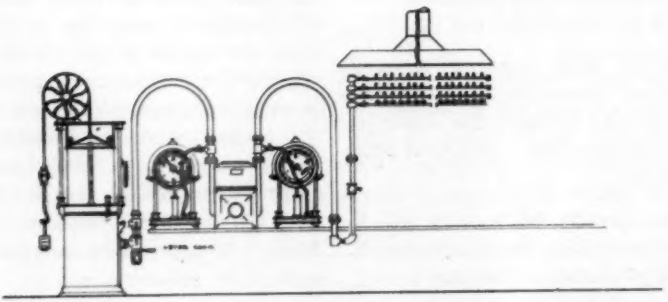
P. S. You will note that even with the fairly constant conditions, as to specific gravity, temperature and pressure of the gases, prevailing at the South Shop during the period of the test, the observed meter capacities were in error in some cases as much as 5 per cent from the correct or standard meter capacity for the same meters. Had the conditions varied more widely the results would naturally have been in error as to a proper basis of comparison by perhaps as much as 25 or 30 per cent. R.B.H.

Appendix C

Abstract covering "Determination of Meter Capacities" taken from a paper on "Consumers' Meters" read by B. H. Spangenberg before the 1904 Convention of the American Gas Association, Vol. 21, Page VI.

These meters were all tested for capacity under exactly the same conditions, and these conditions approached as closely as possible the conditions under which a meter operates in actual service. On the accompanying sketch it will be noted that an ordinary 5-foot meter prover was used as a reservoir for the gas passed through the meter under test.

The operation of testing was as follows: The meter was connected as shown on sketch; gas was admitted from the street main to the holder; after filling the holder, the supply from the street main was closed off, outlet from holder was opened, allowing gas to pass from the holder through three feet of two-inch piping and five feet of one and one-quarter inch connecting hose; an outlet to an arch gauge was inserted between the end of this hose and the inlet union to meter; the gas, after passing through the hose, entered the meter, and, passing through the meter, entered a similar length and size of hose between the outlet of the meter and a six-foot run of two-inch piping, which terminated in a bank of burner bars; between the outlet union of the meter and the beginning of the outlet hose an opening was inserted for an arch pressure gauge; the gas, after passing through the meter and the outlet connecting hose, and the run of piping and the burner bars, issued from the burners on the bars; all tests were made with the burners lighted, and a sufficient number were lighted in each case to maintain through the meter the desired differential pressure; the pressure on the arch gauge at the inlet of the meter was in all cases maintained at 2.0 inches; the pressure on the arch gauge at the outlet of the meter was likewise maintained in all cases at 1.7 inches, 1.6 inches and 1.5 inches, re-



COPIED FROM PROCEEDINGS OF THE AMERICAN GAS LIGHT ASSOCIATION VOL. [illegible] — 1904 — PAGE [illegible]

APPARATUS FOR TESTING THE CAPACITY OF GAS METERS UNDER VARYING DIFFERENTIAL PRESSURES

spectively, for the .3, the .4 and the .5 inch drop in pressure desired through the meter; these arch gauges were specially designed gauges having a scale with .02 divisions of an inch; these divisions were sufficiently large to allow readily of .01 inch readings, and consequently all pressure loss readings are well within the limits of .01 inch. The scale on the meter prover was likewise subdivided into .02 cubic feet divisions, and these divisions were also of such a size as to be easily subdivided by the observer into .01 cubic foot divisions.

The tests were conducted in the following manner:

Each meter was first connected on the inlet side only; gas was allowed to flow through the meter until it was completely purged of air; the outlet opening was then sealed off by hand, the full pressure of the holder thus being thrown on all gas joints between the holder and the meter outlet; any leak would be indicated by the holder falling; after all joints were thus proven gas tight, the hose was conneceted to the meter outlet screw; gas from the holder was then allowed to pass through the meter and lighted at the burners, and a sufficient number of these burners were lighted, extinguished or adjusted to a flame of sufficient size to maintain through the meter the desired differential loss in pressure; to maintain a constant initial pressure of 2.0 inches at the inlet of each meter, it was necessary to add or remove weights from the holder; on account of the fluctuation in pressure at the outlet of the meter, the needle of the outlet gauge showed a constant movement above and below the desired reading, but in all cases an adjustment of burners was made until the variation above equalled the variation below the line of desired reading.

In a series of preliminary tests, it at first seemed almost impossible to regulate the burners so as to equalize these variations, but after making a good many preliminary tests and providing enough men, this difficulty was overcome, and it is safe to say that the readings—are true readings with an error of considerably less than one per cent., including the personal equation of the observers, and this applies alike to all of the meters which were subjected to this comparative test.

In making these observations, three men were constantly employed; two of these men having had very extended experience in the making of capacity tests, the other man being an inexperienced man, whose only duty it was to light or extinguish the burners, or adjust any single burner on the burner bar, as directed by one of the experienced men; one of the experienced men operated the gas supply to and from the meter prover, and observed both gauges during the burner adjustment for the desired loss in pressure; the second experienced man also observed both gauges during this burner adjustment, and directed the third man in his duties. After the adjustments had been made the test was started, with the gas flowing through the meter at the desired differential pressure, when one of the lines indicating .1 foot division on the holder scale was exactly opposite the scale indicator; at this instant both men noted the reading of the holder scale, and simultaneously a stopwatch was started by the man controlling the gas flow; both men then turned their attention to the readings of the arch gauges, at the same time observing the holder scale and the number of seconds

passed on the stop-watch; the length of run was one minute; at the instant of completion of the one-minute run, the cock controlling gas flow from holder was quickly closed; both men took a reading of the holder scale at this point, and independently worked out the difference in the two holder readings; the difference of these two readings being the amount passed through the meter in one minute, this difference multiplied by sixty gave the amount which the meter would pass per hour; if, during the one-minute run, the differential pressure, being observed by both men, varied at all, the test was stopped, and a new adjustment of burners and another test was made.

With the 20 light and 30 light meters the length of run was only one-half minute, with occasional runs equalling one minute.

A thermometer was inserted with its naked bulb directly in the flow of the gas, in a tee in the outlet line from the gas holder, and frequent readings were taken.

No corrections have been made for differences in temperatures or specific gravities while making the tests, but average temperatures of 79 deg. F. and specific gravities of .64 are approximately correct.

TABLE OF CAPACITIES OF METERS OF VARIOUS KINDS AND SIZES

Light Size	Kind of Meter	Company Meter Number	Pressure of Gas at Meter Inlet in Inches of	Observed Meter Capacity in Cu. Ft. per Hr. with Gas under Varying Sp. Gr. Temp. and Press. with Pressure Drop in Ins. of Water over Meter of		Corresponding Standard Meter Capacity in Cu. Ft. per Hr. of Gas of .5 Sp. Gr. under Standard Conditions of 60°F and 30 ins. of Mercury Pressure with Pressure Drop in Ins. of Water over Meter of	
				½	1	½	1
3		504997	6.6	72.7	120.0	69.9	115.5
3		646378	7.5	68.5	120.0	66.0	116.0
3		533768	6.6	68.5	118.0	67.2	115.7
3		334150	6.8	56.6	94.7	55.6	92.9
3		704450	8.0	61.5	94.7	59.5	91.6
5B		50128	7.8	156.5	225.0	151.5	217.5
5B		697090	7.0	138.4	211.8	138.4	211.7
5B		50128	7.0	146.9	225.0	150.0	229.6
5		700504	7.0	85.7	130.9	87.2	133.4
5		OG115	7.0	112.5	163.6	114.5	166.5
5		234402	7.0	138.5	211.8	140.7	215.1
5		85179	7.0	72.0	118.0	72.4	118.7
5		PS5804	7.0	102.9	156.5	102.3	155.5
5		52421	7.0	71.3	110.8	70.7	110.0
5		PS57970	7.0	87.8	138.5	88.8	140.2
5		V379	7.0	82.8	128.6	83.5	129.6
5		701197	7.0	77.4	120.0	77.5	120.1
1A		139010	6.5	146.9	225.0	146.5	224.4
0		479048	7.0	150.0	257.4	149.6	256.4
10		625009	7.0	150.0	225.0	149.0	223.6
10		01487	7.0	151.2	225.0	150.2	223.5
10		647377	7.0	148.8	222.1	147.4	220.0
10		479374	7.0	129.5	204.5	132.2	208.8
10		629623	7.0	146.1	216.9	145.7	216.3
10		130468	6.8	174.8	264.8	178.2	269.9
10		41736	7.0	111.8	165.0	112.5	166.0
10		530514	7.0	126.8	193.6	128.3	195.8
20		215876	7.0	167.4	253.3	169.9	257.1
20		702019	7.0	268.6	409.0	272.7	415.2
20		105334	7.0	222.2	342.4	226.3	348.7
20		336071P	7.0	191.4	285.9	195.9	292.6
20		708361	7.0	215.6	324.2	221.9	333.6
20		PS1677P	7.0	230.9	353.0	230.9	352.9
30		707691	7.0	295.0	444.4	304.6	455.2

30	40136A	7.0	313.2	433.7	319.5	442.4
30	OG1139	7.0	375.0	572.0	381.9	582.5
30	705246P	7.0	295.0	444.4	298.2	452.3
30	47045	7.0	236.8	360.0	241.8	367.6
30	706616	7.0	310.2	467.0	317.4	477.8
30B	453033P	7.0	634.4	947.3	678.5	1013.2
45	704418P	7.0	455.7	705.8	478.3	740.8
45	707756	7.0	580.6	878.0	608.6	920.3
45	705240	7.0	404.5	600.0	424.0	628.9
45	129640	7.0	349.5	514.3	366.8	539.8
60	708155	7.0	521.6	765.9	548.3	805.0
60	OG31565	7.0	590.1	878.0	620.2	922.8
60	553943	7.0	692.3	1028.5	733.7	1090.1
60	701280P	7.0	529.4	765.9	559.7	809.5
60	207867	7.0	473.7	706.0	493.8	735.9
60B	672434G	7.0	1333.3	2117.6	1385.5	2200.3
60B	640876P	7.0	1384.6	2117.6	1438.6	2200.3
100	494433	7.0	750.0	1107.7	755.8	1116.0
100	118505E	7.0	800.0	1180.3	808.4	1192.7
100B	358453	7.0	1894.7	3130.4	1917.6	3168.2
100B	457056P	7.0	1948.1	3000.0	1971.6	3036.2
150	698420P	7.0	900.0	1313.9	909.0	1324.4
150	47715E	7.0	1666.6	2535.2	1684.1	2561.9
150	687067P	7.0	1406.2	2142.8	1416.7	2158.8
200	470931	7.0	1241.3	1836.7	1260.0	1859.9
200B	689045	7.0	3461.5	5142.8	3509.5	5214.3
200B	489010	7.0	3600.0	5294.1	3717.5	5466.9
300	346848	7.0	2476.8	3377.4	2545.5	3470.9
60C	654435	7.0	5901.6	8571.4	6065.2	8839.5
60C	654435	7.0	6000.0	8571.4	6083.3	8690.8
5	398677	7.0	171.4	276.9	174.4	281.5
1	473701	7.0	163.6	288.0	164.5	289.6

Separation of Condensates in Water Gas Plants*

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DURING the last year a study has been made of the conditions of tar separation in New York City water gas plants, with the object in view of segregating the tar into fractions of differing specific gravities.

Viewing the plant as a whole it is evident that the heaviest material, i. e.: that of the highest boiling point, condenses from the gas nearest its point of production, and that the lighest condensate with lowest boiling point, will leave the gas at its point of exit from the plant. Intermediate between these extremes it would be natural to expect that the fall in specific gravity of the tar or oil condensate would be progressive. This was confirmed by gravity determinations made at many points in the works.

It is obvious from the above that the desired result would be obtained by collecting the condensates at numerous points and treating them separately.

A preliminary experiment was therefore made at one large plant in which individual separators were provided for handling the condensate from:

1. The Wash Boxes
2. The Condensers
3. All Other Apparatus

All tar pumped from each section of each separator was measured, temperatures were taken in each separator and samples of tar from the three groups were collected daily and examined by the Chemical Department.

The following tabulation gives the proportion of tar recovered from each

*Paper secured through the Committee on Disposal of Waste from Gas Plants.

group, the temperatures observed at the down pass of the first compartment of the separators and the gravities:

Group	Per Cent of Tar Recovered	Temperatures	Spec. Gravity
Wash Boxes	30%	170°-180°F	1.10°
Condensers	50%	150°-160°F	1.07°
Other Apparatus	20%	85°- 95°F	1.04°

The character of the water from the separators was as follows:

Wash Boxes—Turbid, due to presence of insoluble foreign matter which appeared to be principally free carbon, but was free from suspended or floating tar.

Condensers and Other Apparatus—Slightly colored but clear and free from suspended or floating tar.

The proportion of tar recovered from the condensers as noted above seems high, which was probably due to tar from the wash boxes being carried over into the collecting mains and deposited in the condensers. This conclusion is borne out by the fact that while all the water recovered from the wash box separators was returned to the wash boxes it was found necessary to supplement it by "make up" water from the condenser separators.

The balance of the water from the condensers and other apparatus separators was discharged to waste.

From the preliminary work done in this experiment it was found that this system of divided separation presented no serious difficulties of operation and had the following advantages:

1st. Reduction of the tendency to form tar-water emulsions.

2nd. Discharge of waste water which, while slightly colored, is free from tar and suspended matter.

3rd. The separation of tar into three classes one of which has a high flash point.

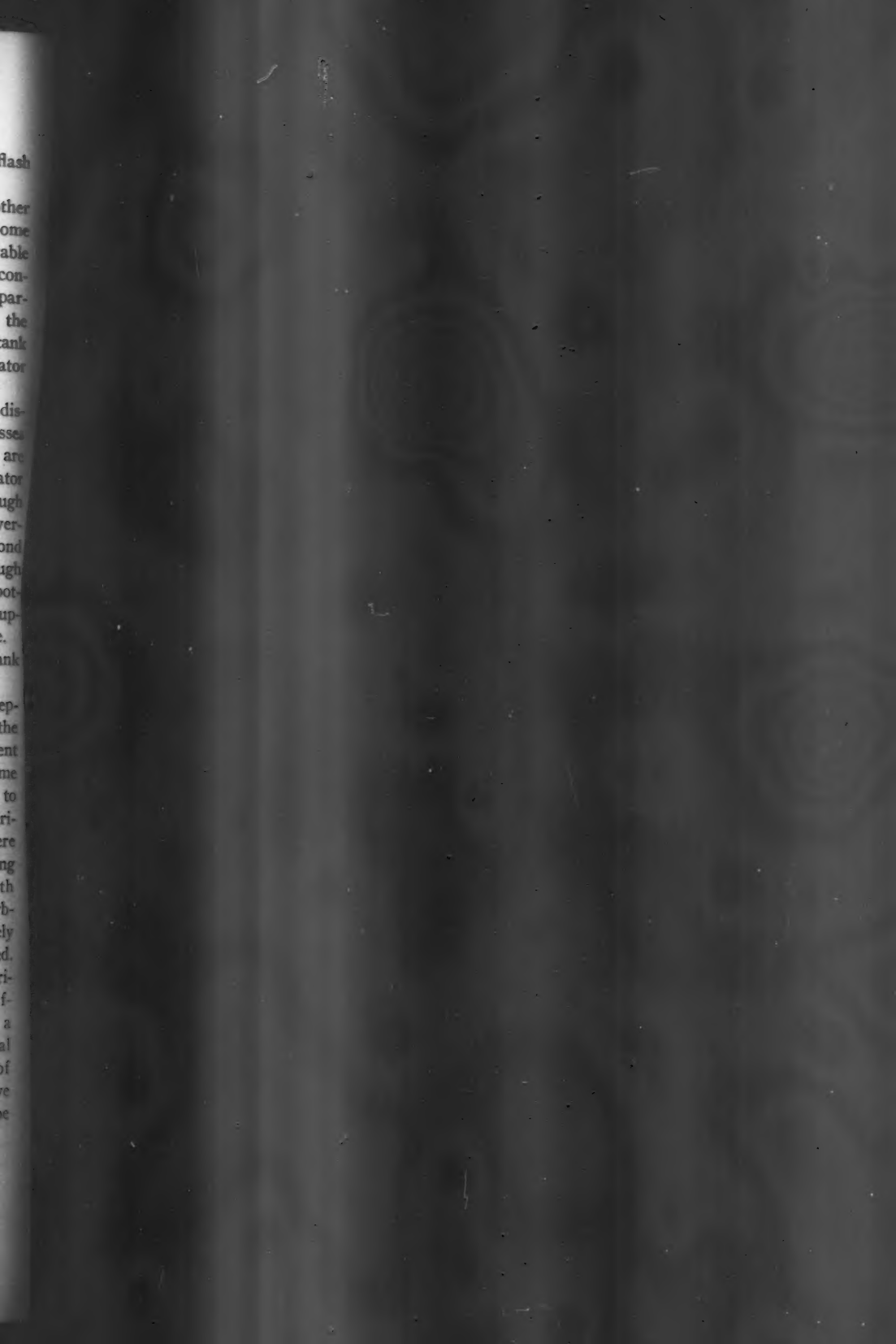
As a result of this experiment, other plants have adopted the system. Some variations have been found desirable such as including the relief holder condensate in that sent to the second separator, and where possible to keep the storage holder drips in a separate tank as their presence in the third separator tends to cause emulsion.

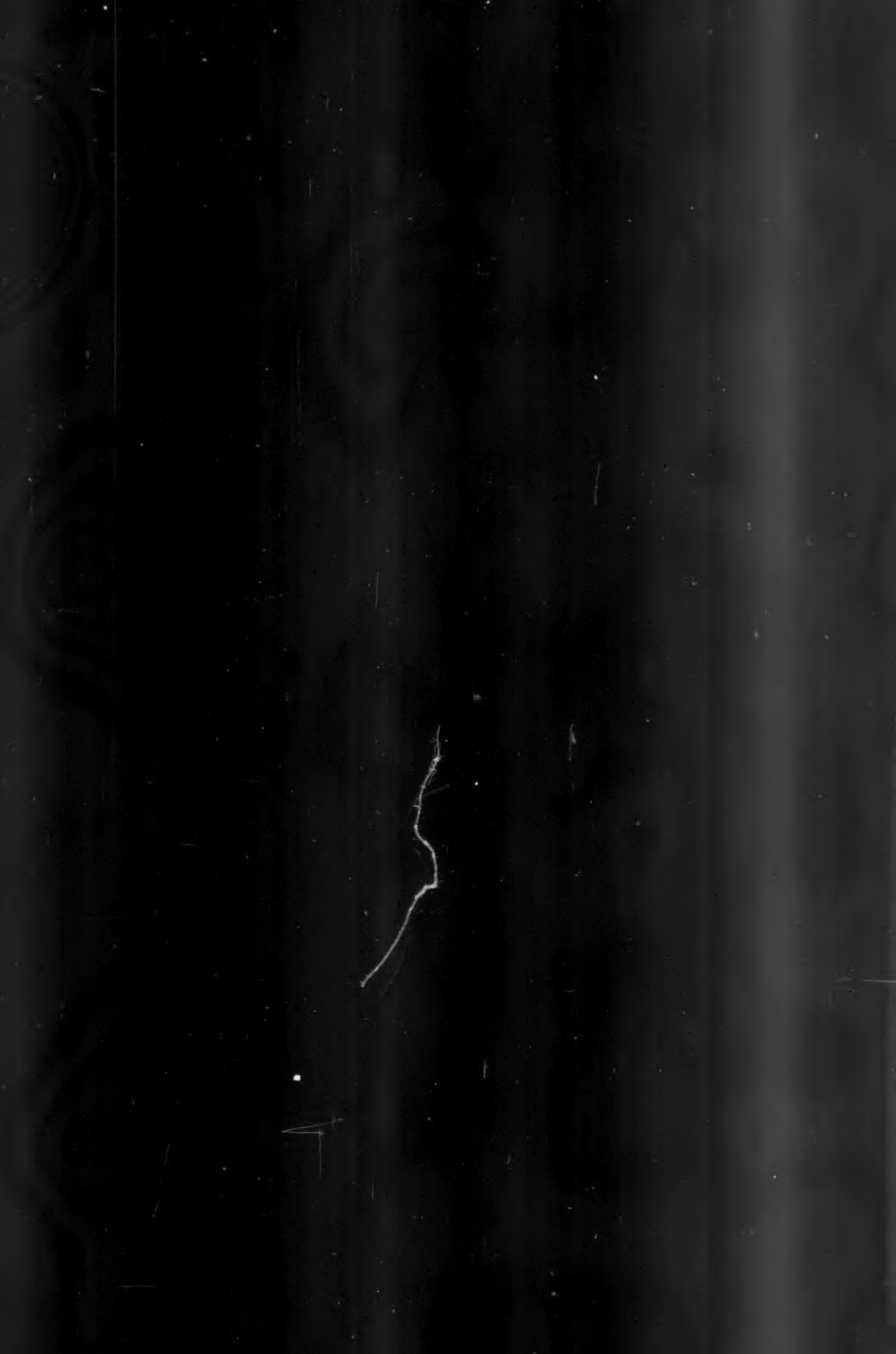
In all plants the waste water discharged from all separators passes through a coke filter. These filters are constructed as follows: The separator overflow water is passed upward through the coke in the first compartment, overflowing through a weir into the second compartment thence downward through the coke in this compartment to the bottom of the discharge pocket from the upper surface of which it flows to waste.

It is desirable that a final settling tank precede the coke filter.

While this system of fractional separation may not be the last word on the subject it has been in use a sufficient length of time to enable us to form some very definite conclusions. In addition to the advantages stated above the experience gained so far has shown that there is an increased flexibility in the handling of the works condensate and that with divided separation the origin of disturbance in separators can be more definitely located and the proper remedy applied.

The heterogeneous mixture of materials of various gravities all requiring different treatment formerly handled in a single separating system was a potential source of trouble. Obviously material of different gravities requires selective treatment and this treatment can only be applied by selective separation.





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